NETWORK WORLD

The Newsweekly of User Networking Strategies

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Net control meet draws int'l experts

By Barton Crockett
Senior Editor

BOSTON — More than 600 researchers, users and vendors assembled here last week at what many dubbed the most comprehensive gathering ever of international experts on network management.

IBM used the forum, the "First International Symposium on Integrated Network Management," for the first public demonstration of a graphical user interface prototype for its NetView network management system.

The conference was sponsored by the International Federation of Information Processing, a United Nations agency dedicated to fostering research about information systems. It was funded by the National Institute of Standards and Technology (NIST) in Gaithersburg, Md., and Mitre Corp. in Bedford, Mass.

Attendees, who came from 35 countries and represented many of the world's leading researchers in the technology, expressed concern about the slow progress being made in network management standards.

"The biggest problem right now with network management is that most of the products are proprietary," said Rajan Rathnasabapathy, a technical staff member specializing in network man-

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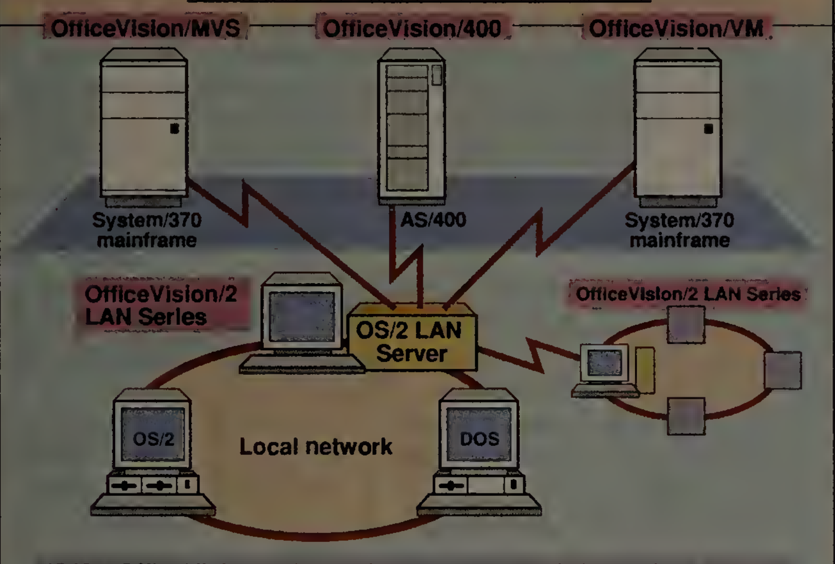
IBM redesigns the office



IBM's OfficeVision software lets users share information across a range of processors. It is based on IBM's Systems Application Architecture and offers a consistent, icon-oriented user interface.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: IBM, WHITE PLAINS, N.Y.

CIO concept makes slow progress in corporate U.S.

Despite early fanfare, the idea of a senior-level chief information officer gets a tepid reception.

By Wayne Eckerson
Staff Writer

Although the idea of a chief information officer (CIO) became a hot management topic in the early 1980s, most users have been slow to adopt the CIO concept, except in information-intensive industries such as finance and insurance.

The CIO was envisioned as a senior-level executive responsible for overseeing network and data processing operations, and crafting an information systems strategy that would help a corporation achieve its business objectives through the innovative use of technology.

But the CIO concept has met with a lukewarm reception from Fortune 500 companies, primarily because many top managers still perceive information systems as a backroom operation rather than as a strategic weapon that can help a firm increase market share, according to senior information systems executives and management consultants.

The CIO strategy has caught

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IBM SAA programs offer systems unity

OfficeVision tools bridge a range of computers, easing information exchange among end users.

By Jim Brown
Senior Editor

NEW YORK — IBM last week announced a series of Systems Application Architecture (SAA)-compliant office applications designed to make it easier for users of different IBM systems to share information.

In what is being hailed as the company's most important software announcement in years, IBM unveiled OfficeVision programs that support common office functions on mainframes running MVS and VM, Application System/400 minicomputers and OS/2-based personal computers in a local network.

The products feature a common graphical user interface and allow users of the disparate IBM systems to transparently exchange electronic mail, documents and data.

OfficeVision is the first fruit of IBM's 27-month-old SAA initiative. SAA is IBM's blueprint for building applications that can run across the company's line of architecturally distinct processors.

The announcement is a significant step in IBM's long-range strategy for cooperative processing. Under the plan, an application on one system would work with applications on other computers to process information. The move also begins to answer a long-held criticism of IBM — that members of its computer family cannot work together easily.

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Oil companies are telecom pioneers, page 31.

Early user lauds AT&T Definity PBX

By Bob Wallace
Senior Editor

NEW YORK — The Mayfair Regent Hotel, one of the first users to migrate from an AT&T System 75 private branch exchange to the company's new Definity 75/85 Communications System Generic 1, said the upgrade went smoothly and gave AT&T high marks for service and support.

The 201-room luxury hotel decided to install the Generic 1 just two months after the switch was formally announced because its System 75 PBX was fast approaching its 800-station limit.

Besides offering more capacity — twice that of the System 75 — the Definity Generic 1 was chosen because it offered time-of-day routing and redundancy, features not available with the System 75, according to Mary Rose, communications supervisor for the hotel, located here.

The Definity 75/85, an-

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NETLINE

NEW GATEWAY PRODUCTS let DEC VAXes communicate as peers with IBM minis. Page 2.

INSTANT WINNERS are verified and lottery proceeds are tallied using scanners and networks. Page 2.

IBM INVESTS in a start-up net software developer. Page 4.

OSI GROUPS team up for net management effort. Page 6.

MAKING ONE FROM TWO has meant tough network challenges for Unisys. Page 35.

SYSTEMS STRATEGIES software gives NEC's network management system a direct link to NetView. Page 46.

NEWSPAPER

FEATURE

Potent forces transform energy utility networks

By Ronald Walczak
Special to Network World

INDUSTRY FOCUS

Utility companies are naturals at networking because they have been building energy distribution networks for decades. They've been innovators in the use of communications technologies since the early 1950s — long before most industries.

In recent years, however, the role of network managers in utility companies has changed. Various internal and external forces have beaten some managers into submission and spurred others into action.

Energy utilities, as regulated monopolies less subject than other businesses to profit-and-loss pressures, were built upon engineering expertise. Utility engineering staffs developed methods for long-term improvement of their operations. As a result, many

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Gateway lets VAXes talk as peers with IBM minis

Systems Strategies product allows DEC VAX processors to participate in IBM's APPN nets.

By Paul Desmond
Senior Writer

CHICAGO — Systems Strategies, Inc. last week announced gateway products that let Digital Equipment Corp. VAX processors communicate as peers with IBM minicomputers.

The ezBridge Peer-to-Peer gateway gives DEC VAXes in a DECnet network support for IBM's LU 6.2 and PU 2.1 protocols, enabling the VAXes to communicate as peers with IBM Application System/400, System/36 and System/38 minicomputers in an IBM Advanced Peer-to-Peer Networking (APPN) environment.

To manage the DEC devices, Systems Strategies also announced ezBridge Network Management, an application program interface to IBM's host-based NetView. With ezBridge Network Management, users can develop applications that allow VAXes and other devices on DECnet to send alarms and alerts to NetView without using NetView/PC.

EzBridge Peer-to-Peer, announced at the Third DeBoever Conference on Managing DEC-IBM Integration held here, expands on the capabilities of Systems Strategies' earlier ezBridge product. The earlier version allowed only a single VAX to communicate as a peer with APPN nodes, said Les Yeamans, vice-president of end-user products for Systems Strategies.

The new product lets one VAX appear as an APPN end node and act as a gateway to the IBM net for other VAXes within DECnet. Each networked VAX can support applications that use IBM's LU 6.2 protocol and communicate with any other VAX or IBM minicomputer, Yeamans said. This could help pave the way for the development of distributed applications capable of straddling DEC and IBM environments.

"Users can pick and choose the best processor for the job," Yeamans said. "[Systems Application Architecture] is IBM's attempt to do that on IBM processors. We've now brought the VAXes into that fold so users can optimize their applications."

One beta user of the product, an international bank that Yeamans declined to name, is using the product to give VAX-based trader workstations on an Ethernet real-time access to an AS/400-based distributed data base management system.

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Innovative networks solve 'scratch' lottery problems

States find solutions to instant winner dilemmas.

By Paul Desmond
Senior Writer

As lottery fever grips consumers, lottery operators are cashing in big with a networking system that streamlines procedures for verifying winners and tallying proceeds from sales of instant lottery tickets.

Lottery operators currently maintain large networks that support on-line daily and weekly numbers games. But a few lotteries have devised methods that allow those networks to be used to tally receipts and to verify winning instant "scratch" tickets.

Instant games generally consist of small cards with a latex-based covering that customers scratch off to reveal numbers or symbols that may correspond to cash prizes.

Atlantic Lottery Corp. in Moncton, New Brunswick, Canada, and the Maine State Lottery both use bar code scanners to read codes on winning scratch tickets to verify their authenticity and to streamline accounting.

Other states, including Massachusetts and Florida, are looking at similar systems. New Jersey verifies instant ticket winners on-line but has lottery agents manually key in a verification number instead of using the bar code scanner.

The problems

Both methods solve various problems that scratch cards present. First, lotteries depend on the lottery agents that sell the cards — typically retail store owners and employees — to verify winners. Since a single card has various combinations of numbers or other characters, it is possible to misread a card and make an incorrect payment, according to lottery officials.

Additionally, all the winning cards have to be collected and tallied by hand for accounting, a time-consuming process that again introduces the possibility of human error. It is also possible for a winning card to be stolen and cashed in more than once.

To eliminate these concerns, Atlantic Lottery worked with GTECH Corp. of Providence, R.I.,

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Briefs

Holding reservations. Transportation Secretary Samuel Skinner last week sent a letter to U.S. Attorney General Richard Thornburgh opposing the proposed merger of Dallas-based American Airlines, Inc.'s SABRE reservation system and the DATAS II system operated by Delta Airlines, Inc.

In his letter, Skinner said that merging SABRE with DATAS II, the largest and smallest of five computer reservation nets in the country, respectively, could give both airlines an unfair marketing advantage. He said that unless American Airlines and Delta convince a third party to buy into and operate the combined reservation system, the deal could violate antitrust laws. Spokesmen from both airlines said the companies had already committed to doing what Skinner recommends.

Partners in telecom. Siemens AG and Unisys Corp. last week signed a nonexclusive worldwide agreement to jointly develop integrated voice/data applications that harness the combined power of Siemens' private branch exchanges and Unisys' computers. Under the agreement, Unisys will develop computer-based software for use in Computer-Supported Telephony Applications (CSTA) and Siemens will write CSTA software for its PBXs. In addition, Unisys will create an application program interface for Unix computers that will enable software developers to write voice/data applications.

Patrick fights budget buster. Federal Communications Commission Chairman Dennis Patrick last week urged members of Congress not to cut the agency's budget for fiscal years 1990 and 1991. Appearing before the Senate Subcommittee on Communications, Patrick told legislators that the FCC "has reached the point where we can no longer do more with less." Although Patrick had asked for about $109 million for fiscal 1990, Congress has appropriated only $99.6 million, the same budget as fiscal 1988.

Patrick warned that unless funding is increased, serious deterioration in processing and enforcing FCC actions will result. As an example, he said the processing time and backlog of common carrier formal and informal complaints are likely to double during 1990 without additional staffing and automation equipment.

AT&T files rate cuts. AT&T filed a $140 million rate cut last week for residential and small business customers to bring its prices in line with the levels specified under price caps.

The cuts will be spread across six services: day message telephone service (MTS); evening MTS; night/weekend MTS; international MTS; credit card and operator services; and Reach Out America. According to the carrier, about $60 million of the price reductions will fall in the MTS services.

AT&T said rate reductions were not necessary in the other two service categories specified in the price cap order — 800 services and business services — because these rates already had been brought below price cap levels in earlier filings this year. With FCC approval, the new rates will take effect on July 1.

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Data Communications
The general merchandise retail industry could save $9.6 billion a year and improve customer service by implementing "Quick Response" technologies and business strategies, according to a recent study. **Page 17**

Local Networking
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Management Strategies
The expanding power and declining cost of public network services is making it easier for companies to move operations out of expensive urban areas, a trend that threatens to squeeze jobs and pull business away from the Big Apple. **Page 23**

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IBM invests in firm that offers Unix file-sharing

Research yields base technology for Transarc.

By Bob Brown
Senior Writer

PITTSBURGH — IBM last week said it has made a "significant" investment in a software development start-up whose technology for sharing files over networks grew out of a six-year-old project between IBM and Carnegie-Mellon University.

That joint research effort resulted in the development of the Andrew File System (AFS), a file-transfer system that lets users of Unix-based processors easily share files across a network. AFS is being used by some 8,000 Carnegie-Mellon students and faculty. It is also the technology on which start-up Transarc Corp.'s file-transfer products will be based.

The founding of Transarc — which will develop file-transfer and transaction processing software for local- and wide-area networks of Unix-based computers — was announced last week by Alfred Spector, the company's president. Spector was previously director of the Information Technology Center at Carnegie-Mellon and associate professor in the university's School of Computer Science here.

Details on the size of IBM's investment in Transarc were not disclosed by either company. Phillip Lehman, Transarc's director of marketing for file systems, said the start-up is an independent company and IBM will not be involved in its day-to-day activities.

Transarc is developing software that would enable a range of organizations to share files and resources over local- and wide-area networks. The company will focus first on products linking systems based on all major versions of Unix, including IBM's AIX, Lehman said. Transarc will possibly expand its offerings to support other operating systems after that.

Transarc will focus first on products linking systems based on all major versions of Unix.

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Lehman said Transarc's software would allow users to access information on other systems without knowing a variety of complicated file access procedures. Improved file access would allow coworkers to work together better and let an employee on the road access his computer back at the office more easily, Lehman said.

Transarc will also develop distributed transaction processing products derived from its work on the Carnegie-Mellon Low Overhead Transaction System (CAMELOT) research project, which was sponsored by the U.S. Defense Advanced Research Projects Agency.

The CAMELOT technology used with Carnegie-Mellon's Mach (Unix-like) operating system simplifies the development of programs that speed transaction processing in multivendor networks, such as banking networks of automated teller machines.

"We formed Transarc because of the rapidly expanding use of large networks of Unix systems and the growing demand for software to facilitate the sharing of network data and resources," Spector said. "The best ideas from AFS and CAMELOT will be transferred" into Transarc's commercial products, he said.

Transarc declined to estimate when its first products will be available.

Transarc's technology could give IBM's Unix-based systems a needed boost, analysts said. The workstation market is among the computer industry's fastest growing sectors, but IBM's AIX-based RT Personal Computer has been left behind the offerings of rivals such as Sun Microsystems, Inc., they said.

According to Louis Giglio, an analyst at Bear, Stearns & Co., Inc., a New York-based investment firm, Transarc's biggest challenge will be adapting its university-developed software to the business setting.

"The university environment tends to be one of openness," he said. "In the corporate world, you don't always want people having so much access."

AT&T eyes 3 locations for digital 56K

By Gail Runnoe
Washington Correspondent

WASHINGTON, D.C. — AT&T last week filed a tariff with the Federal Communications Commission to provide its 56K bit/sec Switched Digital International Service to the U.K., Japan and the Caribbean beginning next month.

The carrier said it would work with the U.K.'s British Telecom International, Inc., Japan's Kokusai Denshin Denwa, Ltd. and Jamaica's Jamaica Digiport International to provide the services. AT&T already offers switched digital service to France.

Under AT&T's proposal, calls made to the U.K. would cost $2.50 for the initial minute and $2.10 for each additional minute. Calls made to Japan would cost $3.95 for the first minute and $2.50 for each additional minute, while calls to Jamaica would cost $1.65 for the first minute and $1.40 for each additional minute.

The service will have a minimum monthly usage fee of $75.

Prices for switched 56K bit/sec service to France are $2.76 for the first minute and $2.30 for each additional minute. That service is also subject to the $75 minimum usage charge.

An AT&T spokesman said the Switched Digital International Service is a fully digital, dial-up service that is supported using Common Channel Signaling System 7. Users will be able to perform videoconferencing, transmit bulk data between computers and send high-speed facsimiles.

AT&T will provide the service using satellite facilities and undersea cables, including TAT-8, a transatlantic fiber cable, and HAW-4/TPC-3, a transpacific cable, the spokesman said.

Neither MCI Communications Corp. nor US Sprint Communications Co. currently offers a 56K bit/sec switched digital international service.

MCI, however, said it plans to introduce such a service domestically this fall and will later extend it overseas.

Exchange trades central net for distributed architecture

By Wayne Eckerson
Staff Writer

NEW YORK — Officials at the American Stock Exchange, Inc. last week detailed plans for a new distributed systems architecture that will support the trading of securities and options on the exchange floor.

The new network architecture, expected to take three years to implement, will distribute processing power and order execution applications among three levels of computer systems connected via an Ethernet local network, according to Edward Balinski, vice-president of systems technology at the exchange.

The exchange currently is supported by a centralized system. All order execution terminals on the exchange floor are linked to Stratus Computer, Inc. and Tandem Computers, Inc. transaction processing systems located nearby at Securities Industry Automation Corp. (SIAC), a nonprofit data processing firm jointly owned by the American Stock Exchange and the New York Stock Exchange.

The distributed processing architecture will save the exchange thousands of dollars in processing costs, significantly reduce the time it takes to add or change applications, and improve application response time, Balinski said.

"Right now, our centralized system tends to be monolithic in structure. The new architecture will be less expensive to maintain and will provide the flexibility we need to implement new applications without doing exhaustive reprogramming and testing," Balinski said.

George Kenney, chief information officer and senior vice-president at the American Stock Exchange, said the three-tiered

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OS/2 Extended Edition to support Ethernet adapters

By Susan Breidenbach
West Coast Bureau Chief

NEW YORK — IBM last week said the next release of its OS/2 Extended Edition operating system will include built-in support for select third-party Ethernet adapters.

This will provide IBM's guarantee of compatibility to customers that want to use OS/2 Extended Edition in Ethernet environments. Until now, manufacturers of Ethernet adapters had to offer their own device drivers for OS/2 Extended Edition, and users had no assurance from IBM that the two would work together.

IBM said OS/2 Extended Edition 1.2 will incorporate the Network Driver Interface Specification (NDIS) standard developed by Microsoft Corp. and 3Com Corp. for the OS/2 LAN Manager. NDIS is used by some 35 hardware vendors.

NDIS defines an executable device driver that gives manufacturers a "universal" interface. Without such an interface, adapter makers would have to write separate device drivers for each individual vendor's implementation of a particular network protocol.

The NDIS interface supports protocol multiplexing, a feature that may also help eliminate the need for bridges between token-ring and Ethernet local networks.

Protocol multiplexing allows multiple protocol stacks, such as Ethernet's Xerox Network Systems and IBM's Network Basic I/O System Extended User Interface, to coexist on a single computer. This would enable a single workstation to be outfitted with interfaces to both Ethernet and token-ring networks and enable it to switch dynamically between the environments.

NDIS is compatible with both token-ring and Ethernet nets, but a given implementation can only support one or the other. Thus, IBM's NDIS driver in OS/2 Extended Edition 1.2 will support only NDIS Ethernet boards, not third-party token-ring adapters that use the NDIS interface.

An IBM spokesman said the company will certify a select number of third-party NDIS Ethernet boards for compatibility with OS/2 Extended Edition 1.2 before the product ships in November.

However, a source at 3Com said all NDIS-compliant Ethernet boards should work with the new version of the operating system, whether they have official IBM support or not.

The NDIS announcement is not IBM's first diversion from the straight-and-narrow token-ring path. Brian Jeffery, managing director of International Technology Group, Inc. in Los Altos, Calif., said IBM has been quietly reselling a third-party Ethernet board to select customers — primarily those in the scientific and engineering market — for some time.

"It's amazing how many people out there, including a lot of IBM sales representatives, don't know IBM supports Ethernet," Jeffery said. Far from encouraging the use of Ethernet, IBM is just "grudgingly providing some second-class support" for it.

However, David Passmore, a principal in Ernst & Whinney's Network Strategies consulting practice in Fairfax, Va., said the NDIS announcement represents "the first time IBM has blessed Ethernet within a mainstream product line.

"It's a major admission that there are people out there who have Ethernet and want to use OS/2 Extended Edition on it," he said.

Correction: A Worth Noting item in the May 8 issue incorrectly listed the title of Harvard University's Tom Davenport. He is a senior research associate.

Clarification: It was reported in the story "Telco billing via EDI gains momentum," (*NW*, May 15) that Southwestern Bell Telephone Co. has electronic data interchange billing trials scheduled with Sears Technology Services, Inc. and AT&T by the third quarter. The firms are currently only discussing such trials.

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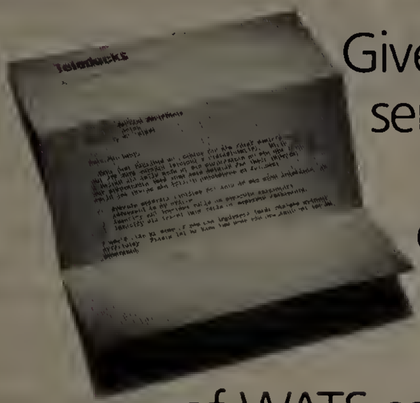

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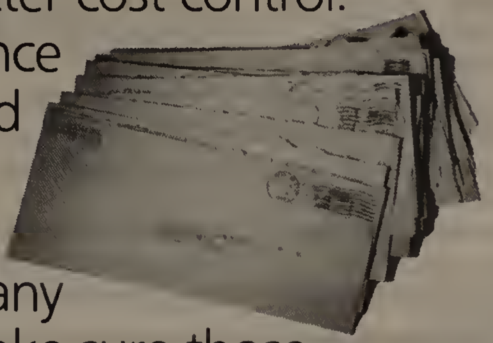

COMMUNICATIONS SERVICES VIA ITT

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Group explores options to order net services via EDI

By Bob Brown
Senior Writer

ST. LOUIS — A group of users and major communications service and equipment providers is evaluating a standard method for companies to order network services via electronic data interchange.

EDI-based service ordering could help carriers respond to users' requests more quickly than with traditional methods, and it is also likely to provide users with instant access to network services information that they need for their network data bases.

Carriers could also cut mailing costs and eliminate errors associated with keying in service-order data.

Members of the Service Order Ad Hoc Committee, which was formed in February, are lobbying to become a full-fledged working committee under the EDI Committee of the Telecommunications Industry Forum (TCIF).

The ad hoc group has about a dozen vendor members, including BellSouth Corp. and Pacific Bell. Roughly six users, including Union Pacific Railroad and Burlington Industries, Inc., are also participating in the group.

The TCIF is a national group of telecommunications equipment and service vendors that addresses standards issues associated with the provision and procurement of telecommunications products and services.

The ad hoc group will present its findings on EDI-based service orders at a TCIF meeting in October, said Donna Grindler, systems manager at Southwestern Bell Telephone Co.'s information systems department. At that point, an official TCIF working committee could be approved, said Grindler, who chairs the ad hoc group.

The proposed TCIF working committee would attempt to develop a standard way for users to order network services by using parts of existing ANSI X12 standards for purchase orders and related documents.

> "Service orders are not at all user-friendly documents at this point," Grindler said.
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That represents a challenge, she said, because service orders are more complex than standard purchase orders and related documents.

"Service orders are not at all user-friendly documents at this point," Grindler said.

Pilot considered

Southwestern Bell Telephone is considering instituting a pilot program for receiving service orders via EDI before a standard is agreed upon, Grindler said. Union Pacific is a likely candidate for such a trial, although nothing definite has been arranged, she said.

Linda Sullivan, telecommunications analyst with the corporate information systems division of Burlington Industries in Greensboro, N.C., said her company is eager to order network services via EDI.

The large textile manufacturer has already invested a large sum of money in EDI capabilities throughout its network, and additional features can often be added for only an incremental cost, Sullivan said.

Major benefits

A major benefit of ordering services via EDI is that the company receives data on the network services as soon as they are cut over or changes to existing services are made, according to Sullivan.

Users need the information about the services to keep their network documentation data base up to date.

Currently, Burlington Industries does not receive such data base information from its carriers until it shows up in the mail with an invoice, possibly weeks later, she said.

"It's not like we're putting in a 2,000-station PBX every day," Sullivan said. "What we're doing is putting in a couple of modems here, taking out a line there — fairly routine things. There should be a fast, standard way of making these requests and changes."

Networks solve lottery problems

continued from page 2

to develop an on-line verification system that works with GTECH's lottery terminals, said Jim Bursey, director of information systems at Atlantic Lottery, which operates a lottery for four provinces in Eastern Canada.

Central host computer

Atlantic Lottery maintains a file with the serial numbers and the dollar value of winning tickets on a central host computer. When a customer presents a lottery agent with a winning ticket, the agent passes a hand-held scanner over the bar code on the ticket and the serial number is transmitted over dedicated lines to the host, where it is compared with the file.

If the ticket is verified as a winner, a message is sent back to the terminal detailing how much to pay the customer and a notation is made so the card cannot be cashed again.

Besides eliminating dual or incorrect payments, the system gives Atlantic Lottery current accounting data so it knows exactly how much prize money has gone uncollected at any time, Bursey said. That information can be used not only to keep lottery accounts current, but also for advertising.

"Some promotions may be based on the availability of prizes — 'Did you know there are still 10 $10,000 prizes available?' That type of thing," Bursey said.

Although he said the system has saved labor in the back-office accounting department, Bursey could not put a dollar figure on it. "The rewards are more subtle and less tangible, such as better security, less prize discrepancies, better prize liability management and ease of use by the retailer and the customer," he said.

Reduction of labor

In Maine, the rewards are more tangible even though the state now scans tickets only in lottery headquarters in Augusta while it evaluates placing scanners at agent sites. Scanners have greatly reduced the labor involved in verifying forms submitted by agents, said Pamela Coutts, deputy director of finance for the State Lottery Commission.

"We were running eight weeks behind with a staff of 13 people counting tickets. Now we have six people doing that same work and we're not behind at all," Coutts said.

Scanning the tickets has also allowed the lottery to terminate a $100,000-per-year contract with a temporary help agency since it now needs fewer workers, she said.

The next step will be to install the scanning devices at lottery agent sites, Coutts said, an undertaking neighboring Massachusetts also has planned.

Richard Finocchio, senior systems analyst with the Massachusetts Lottery, said his department was expected to recommend a bid today on scanning devices that will eventually be incorporated with lottery agent terminals.

Finocchio said the Massachusetts network will be able to handle higher volumes than any other state lottery network in existence because about 98% of all winning numbers will be stored in a host computer's nonvolatile memory.

That means tickets can be validated without accessing the computer's hard disk, which takes about 20 times longer than accessing nonvolatile memory, he said.

Proteon X.25 interface for router bows

By Laura DiDio
Senior Editor

WESTBOROUGH, Mass. — Proteon, Inc. last week introduced an X.25 interface for its internetworking router that lets users link remote Ethernet and token-ring local nets over wide-area networks.

Proteon also said that by year end it will introduce its first Fiber Distributed Data Interface (FDDI) product. The company will unveil an adapter for its p4200 Multi-Protocol Router that enables users to link Ethernet and token-ring nets over an FDDI backbone, according to Mick Scully, Proteon's internetworking product manager.

The new p4221 X.25 is a dual-port adapter that is housed in the p4200 router and supports connections to public X.25 packet-switching networks. The router also lets users link local nets over private lines ranging from 19.2K bit/sec to T-1 speeds.

The p4221 X.25 product has an on-board Motorola Corp. 68000 microprocessor that offloads the task of formatting data packets from the p4200 router. This enables the device to handle routing functions without any performance degradation, Scully said. The p4221 X.25 interface comes with 1M byte of dynamic random-access memory for packet buffering.

The p4200 router operates at the network layer of the International Standards Organization's Open Systems Interconnection model, enabling it to link dissimilar networks such as Ethernet and token ring.

The router, for instance, receives data from an Ethernet and ships it to a packet assembler/disassembler on the p4221, which strips the Ethernet headers from the data packet and reformats it into X.25 form for transmission across the net.

When it reaches the remote token ring, a PAD strips the X.25 envelope and fits the data with a token-ring header.

Proteon's p4221 X.25 adapter also supports the transmission of local net-to-local net Transmission Control Protocol/Internet Protocol traffic. To ensure interoperability with other X.25 products, the p4200 router encapsulates TCP/IP packets within X.25 envelopes so they can be transmitted over X.25 networks. The p4221 interface uses the RFC 877 TCP/IP standard method to format IP data packets within the header of each packet.

This is crucial, Scully noted, because X.25 network implementations vary.

"Every country in Europe, as well as Japan, Australia and the U.S., has subtle differences in its X.25 implementations at the frame and packet layer, which specify packet arrival time and network diagnostics capabilities. So we needed a standard method to encapsulate the data," Scully said.

Proteon's p4221 adapter includes a "National Personality" feature that enables users to configure the router to accommodate different public and private X.25 packet networks.

Users can call up a menu and type in the name of the X.25 carrier. The p4221 adapter will set the appropriate frame and data packet parameters, Scully said.

Currently, Proteon has certified that the p4221 supports transmission of data over Telenet Communications Corp.'s X.25 network. The company plans to certify that the p4221 X.25 can use other domestic carriers' packet-switched nets, as well as X.25 nets in Germany, France, the U.K., Japan and Australia, Scully said.

In addition, Proteon will support the U.S. government's Defense Data Network standard X.25 and Xerox Corp.'s Xerox Network Systems in the next release of the adapter, which is due out in August, Scully said. By the end of the year, the firm will also introduce a version of the adapter that permits connection of remote Digital Equipment Corp. DECnet nets over X.25, he added.

The p4221 X.25 interface costs $3,900. It will start shipping in mid-June. The p4200 Multi-Protocol Router sells for $7,900.

OSI groups team in net mgmt. effort

By Gail Runnoe
Washington Correspondent

WASHINGTON, D.C. — Three major OSI user and vendor groups said last week they will work together to speed availability of Open Systems Interconnection standards for network management.

The OSI/Network Management Forum, the Corporation for Open Systems International (COS) and the Standards Promotion and Application Group (SPAG) of Brussels, Belgium, will pool their resources to solve network management system issues, according to John Miller, president of the OSI/Network Management Forum.

Miller, also director of new services development and network management at AT&T, said the groups each have distinct goals but share common interests. By working in concert on

(continued on page 8)

Exchange trades central network

continued from page 4

distributed architecture will reduce the cost of running the network by half.

"The new system will distribute processing power from our centralized systems, where [millions of instructions per second] are expensive, to minicomputers and workstations, where there is a better MIPS-per-dollar ratio," Kenney said.

At the highest level, Digital Equipment Corp. VAX minicomputers installed at SIAC will support a master data base of orders and quotes for the exchange floor as well as gateways to other systems. The VAXes will run Sybase, Inc.'s SQL-compatible relational data base management system.

At the middle tier, MicroVax minicomputers at SIAC will support quote making, book processing and other order processing applications. On the exchange floor, Intel Corp. 80386-based personal computers and intelligent terminals will handle localized user applications, Balinski said.

The American Stock Exchange is redesigning its network infrastructure to support the new DP architecture, Balinski said.

Currently, 220 order execution terminals on the exchange floor are linked via a private X.25 packet network to two Stratus XA2000 transaction processing systems at SIAC. Another 211 terminals used for executing options and securities orders are linked via 32 terminal controllers to seven Tandem TXP systems at SIAC via 4.8K bit/sec circuits.

Primary, backup

Under the new distributed architecture, workstations, terminals and peripherals on the exchange floor will be connected to a primary and a backup DECnet Ethernet network. Two T-1 lines will link these redundant networks to redundant Ethernets supporting the VAXes at SIAC.

Because net devices will be supported by Ethernet and will run DECnet protocols, they will enable the American Stock Exchange to add or revise applications in about half the time it currently takes, Balinski said. With the existing architecture, any changes affect the whole system.

Balinski is now implementing an Interest Rate Future application, a stand-alone futures trading system that handles interest rates. He estimates that the new architecture will enable him to get the application up and running in seven to eight months, as opposed to 18 months under the current system, Balinski said.

"An architecture based on common network and software protocols, and user interfaces not only makes applications run faster, it gives us greater flexibility to move and add applications," he said. ▣

Gateway lets VAXes talk as peers

continued from page 2

EzBridge Peer-to-Peer includes a Q-bus-compatible board, outfitted with a Motorola Corp. 68020 microprocessor and 2M bytes of memory, that resides in a VAX designated as a Systems Network Architecture gateway. The board, along with DECnet router software that runs on the VAX, performs the DECnet-to-SNA protocol conversion and handles communications with the SNA net for the attached DECnet devices.

Client software runs on any DECnet-attached VAX supporting applications that need to communicate with applications in the IBM realm. It supplies only the LU 6.2 programming interface needed to run applications; all communications functions are off-loaded to the server, Yeamans said.

As many as four 56K bit/sec links to SNA devices are supported by the board on the server VAX, Yeamans said.

The server does not have the full complement of routing capabilities of some other APPN nodes, although some of those are not required because it is an APPN end node, Yeamans said.

For example, the server would not have the pass-through capability that enables an APPN node to reroute messages that are not intended for it or its attached devices.

> As many as four 56K bit/sec links to SNA devices are supported by the board on the server VAX, Yeamans said.
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The server can also be outfitted with the optional ezBridge Network Management software so users can send alarms to NetView that are generated by the VAX or its attached DECnet devices, Yeamans said.

The software runs on the same board that supports ezBridge Peer-to-Peer, taking advantage of the SNA code that comes with that product to make the VAX appear to NetView as a PU Type 2 device, he said.

By itself, the net management software provides only the conversion from DEC protocols to NetView-compatible formats and the Systems Services Control Point-to-Physical Unit session needed to transmit net management data to NetView. Users build applications tailored to the devices they want to monitor and control from NetView, Yeamans said.

All the ezBridge products are available now. The ezBridge Peer-to-Peer server software ranges from $6,000 to $20,000, and client software ranges from $1,000 to $7,000, depending on configuration. EzBridge Network Management software ranges from $7,000 to $25,000, depending on configuration. ▣

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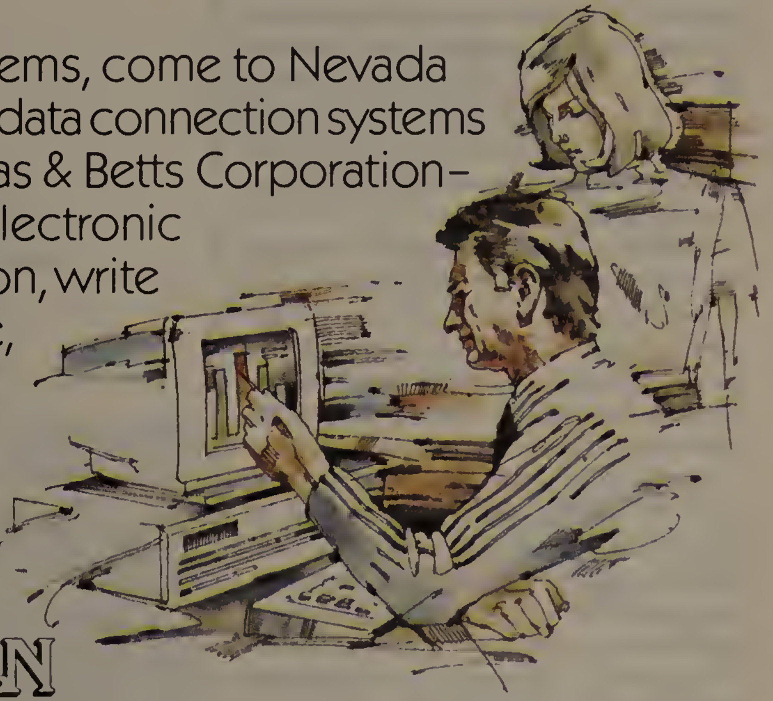

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CIO concept makes slow progress

continued from page 1

on among users, such as financial services and insurance companies, that rely heavily on information technology to support revenue-generating services. (Within these companies, the CIO title is not always applied, but there is a senior manager with similar responsibilities.)

Industry observers expect companies in other industries to follow suit in the next five to 10 years as they begin to rely more on information systems for a competitive advantage.

Role of the CIO

As originally conceived, the CIO was to be a top-level executive — on par with a chief financial officer or chief operating officer — with strong business and technology skills. The CIO would act as an adviser to senior management on the strategic use of information systems.

By structuring information systems operations under a CIO-type executive, the company would foster better integration between communications, DP and end-user computing. The CIO would keep users abreast of new technologies and would improve coordination between DP and networking departments, which often function independently of each other.

But today, only about 10% of Fortune 500 companies have put in place a CIO-type executive, according to William Gruber, president of Research & Planning, Inc., a consulting firm in Cambridge, Mass.

Gruber and William Synnott introduced the concept of the CIO in their book, *Information Resource Management: Opportunities and Strategies for the 1980s* (New York: John Wiley & Sons, 1981).

Gruber cited three reasons why CIOs have not as yet become commonplace in corporate America. He said there is a gap between the time a new idea is introduced and when it becomes widely implemented.

In addition, network and DP managers have been slow to acquire the business skills needed to function as a CIO. Thirdly, most U.S. corporations have been too focused on short-term gains to implement a long-term information technology strategy. "If companies don't think five to 10 years down the road, the CIO is neglected along with any strategic use of technology," he said.

Even when a company has reorganized to support a CIO, most CEOs haven't given CIOs enough clout within the company to be effective strategic planners, according to Walter Ulrich, a consultant with Coopers & Lybrand in Houston.

The top information systems executives may have responsibility for DP and communications, but often they are not perceived by senior executives as true members of the management team, Ulrich said.

Cutting to the core

The CIO concept has won greater acceptance in industries in which innovative use of technology has become a competitive necessity.

"CIOs are more valued in companies in which technology cuts to the core of the business," said George Kenney, CIO and senior vice-president of the American Stock Exchange, Inc. Within such companies, CIOs must build corporate network architectures that provide a competitive advantage and satisfy the requirements of a growing number of network-intensive business applications, Kenney said.

Kenney is redesigning the American Stock Exchange's network to better reflect the needs of the exchange and the brokers and traders who work there. He is in the process of building a fully distributed on-line order-processing system that he said will improve the competitiveness of both the exchange and the brokers (see "Exchange trades central net for distributed architecture," page 4).

These firms are attracting CIOs with expertise in both business and technology. Kenney, for example, moved up through the technical ranks and then earned an MBA from Columbia University in New York. "Although a business person may earnestly try to understand technical issues, he will simply act as another layer of control between the CEO and information systems," Kenney said.

OSI groups team in net mgmt. effort

continued from page 6

network management, the groups will ensure their specifications are consistent and compatible, he said.

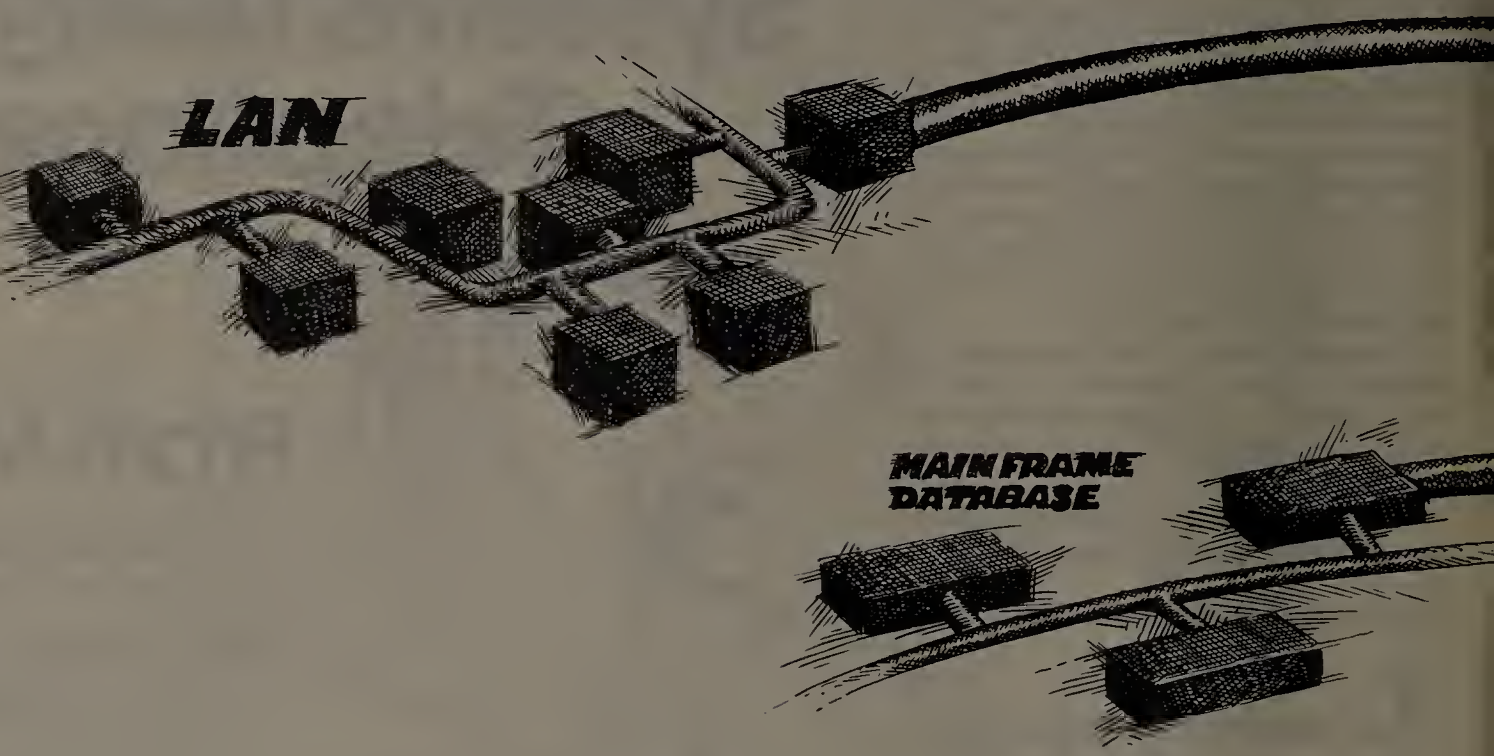
Miller called the agreement "an extremely significant event for users who want a multivendor network solution."

Lincoln Faurer, COS president and chief executive officer, said net management standards must be addressed before OSI can make significant advances. Combining the skills of COS, the OSI/Network Management Forum and SPAG will speed the development of OSI network management specifications. "This can only benefit users," he said.

According to the agreement, the three organizations will form an executive council made up of the leader and two representatives of each group. This council will set the direction that the groups will follow on network management issues and determine what actions each group will take.

Faurer said he will represent COS with Daniel Warmenhoven, general manager of the information networks group at Hewlett-Packard Co., and Edward Matthews, vice-president of strategic planning and development at Northern Telecom, Inc.

Miller will represent the OSI/Network Management Forum, and SPAG will be represented by Patrice d'Oultremont, its managing director. Neither group has yet announced its two other representatives.



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Early user lauds AT&T Definity PBX

continued from page 1

nounced in February, fulfilled a long-standing AT&T promise to integrate the company's System 75 and System 85 PBXs. The Definity switch combines the high-density line interfaces and modular cabinets of the System 75 with the call-processing capacity, networking capabilities and advanced features of the high-end System 85.

Although the hotel declined to say how much it cost to upgrade to the Definity, David Barclay, executive vice-president and MIS director for Heitman Financial Services, Ltd., the Chicago banking firm that owns the hotel, said the upgrade was less expensive than installing a second System 75 and linking the switches with tie lines. "We got a great deal more functionality for less money," Barclay said.

When AT&T demonstrated a working prototype of the merged System 75/85 at a users group meeting in St. Louis in 1988, it told customers they could retain 80% to 90% of their current switch hardware when they upgraded to Definity.

The Mayfair Regent retained well over 80% of the System 75's hardware when it upgraded to the Generic 1.

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The Mayfair Regent retained well over 80% of the System 75's hardware, including all line interfaces and the main cabinet, when it upgraded to the Generic 1. Only the System 75's processor was replaced.

New hardware and wiring installed as part of the upgrade included a Generic 1 cabinet, which supports most of the current stations using four-pair twisted-pair wire, and fiber-optic components to connect that cabinet to the main cabinet.

One cabinet houses the system's processor, memory, interfaces for add-on systems and initial circuit packs, and the other houses the balance of the circuit packs, according to AT&T.

The duplicate common control capability of the Generic 1, an attribute that made the switch attractive for the hotel, enables one cabinet to take over for the other in the event of a failure, Rose said. "It would be pretty rare for that to happen, but it's better to be safe than sorry," she said.

The Generic 1's time-of-day routing feature, another key selling point, will enable the hotel "to provide guests with the best telephone service at the lowest price," Rose said.

Unsure how the cutover would go, the hotel's telecommunications staff had special trunks brought into the hotel for guest and employee use in the event that the upgrade went awry. But the three-hour cutover, which took place before dawn on April 30, went off without a hitch.

"The cutover went amazingly well," Rose said. "We had told our guests the night before that they may not be able to make calls until 10 a.m. the next morning, but their phones were back before they awoke."

The hotel has been using the Generic 1 for almost a month and has reported no significant problems.

"I was surprised and delighted that the [upgrade] went so smoothly," said a Mayfair Regent operator.

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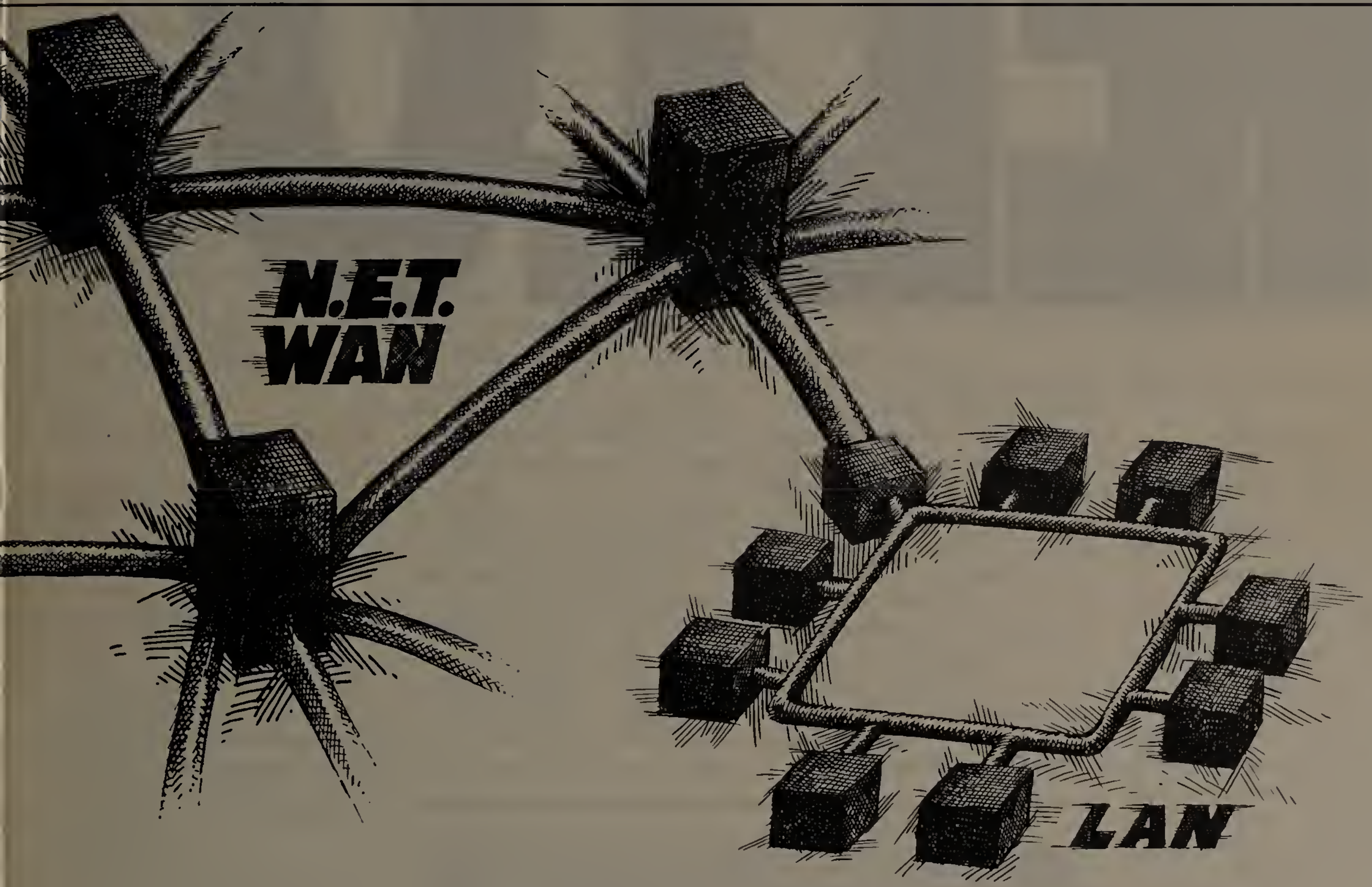
Even the hotel's operators were impressed with the ease of the upgrade and early use of the Definity Generic 1. "I was surprised and delighted that the [upgrade] went so smoothly. The Definity has performed fantastically since then," one operator said.

The Mayfair Regent hotel joins Loyola University, Parker Hanifan Corp., BP America and Comdisco Disaster Recovery Services, Inc.'s hot site in San Ramon, Calif., as early Definity customers.

The hotel is only using two of eight application interfaces supported by the Generic 1, one to support a new AT&T call-accounting system and the other to support a property management system. The hotel does not use such popular add-on systems as voice mail or automated attendants, and it has no immediate plans to purchase Integrated Services Digital Network Primary Rate Interfaces for the new PBX.

To ensure a problem-free cutover, AT&T tested the Generic 1's common control and switch hardware extensively before installation at the hotel, according to AT&T Account Executive Carlos Salinas.

He said the hotel's System 75 had call processing power to spare but that it could not support the number of stations the hotel needed. Mayfair Regent rooms generally have three telephones, while larger suites can have as many as nine, according to Salinas. "The fancier suites have a phone on either side of each bed, one in each restroom and one on each desk," he said.



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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS AND FINANCIALS

Worth Noting

Citibank, N.A. has asked to join an automated teller machine network operated by 13 of Japan's largest banks. The Japanese banks may not gain much from such an arrangement, since Citicorp has a small number of branches and ATMs in Japan. But the banks may comply with the request in an effort to improve strained U.S.-Japan trade relations, analysts said.

People & Positions

The **Infotron Systems Corp.** Board of Directors recently elected **James Castle,** the company's president and chief executive officer, to the additional post of chairman of the board.

Castle succeeds **Robert Purcell,** who retired from the position but will continue to serve on the board.

Castle joined Infotron Systems in October 1987. The Cherry Hill, N.J.-based company sells T-1 multiplexers and other networking equipment.

Joseph Pelton, former executive assistant to the director general at the International Telecommunications Satellite Organization in Washington, D.C., has been named director of the **University of Colorado**'s Interdisciplinary Telecommunication Program (ITP), part of the university's College of Engineering and Applied Sciences.

American Network Exchange, Inc., a Boca Raton, Fla.-based interexchange carrier, has named **Peter Izzo** vice-president of operations.

Izzo will manage network operations, switched and customer services, order processing, billing and new product development.

RBHCs play limited role in info services

One year after Greene ruling, carriers have had minimal impact on information services markets.

By Bob Brown
and Gail Runnoe
Network World Staff

In just over a year since they were given limited freedom to offer information services, the RBHCs have had little impact on the market and the jury is still out on how successful they ultimately will be.

In March 1988, U.S. District Court Judge Harold Greene granted the regional Bell holding companies permission to offer a number of information services, including voice messaging and voice mail, as well as gateway and electronic messaging services. Greene denied the RBHCs permission to offer information content but allowed them to offer a variety of information transport services.

Since then, most of the RBHCs have announced offerings, or have begun conducting trials, in the voice mail and related voice services market, as well as in the information services gateway market (see graphic, page 12).

In electronic messaging, which includes electronic mail and electronic data interchange services, the RBHCs have just begun to introduce services or reveal their plans ("RBHCs prepare for plunge into EDI, E-mail markets," *NW*, April 24).

According to industry watchers, the RBHCs have had some impact on the voice-messaging market, where they are bringing services to a whole new audience of small business and residential users.

But the RBHCs have made only limited inroads into the gateway and electronic messaging markets, observers said.

Voice services

Most of the available RBHC voice-messaging services, such as Bell Atlantic Corp.'s Answer Call and Voice Mail systems, only hit the market in the past few months and are targeted at residential and small and midsize business users. Still, the presence of the RBHCs has altered the voice-messaging market in a couple of ways, said Lisa French, an industry analyst at Dataquest, Inc., a San Jose, Calif.-based market research company.

(continued on page 12)

INDUSTRY BRIEFS

Banyan Systems, Inc. recently reported that Richard Meise has resigned as president to pursue other opportunities in the high-tech industry. Banyan cofounder David Mahoney, who is chairman and chief executive officer of the local network company, has assumed the post of president.

Meise helped Banyan grow from 130 employees and annual revenue of $10 million when he arrived in April 1987 to 430 employees and an expected $80 million in revenue this year. However, some analysts said that one of Meise's major tasks, crafting a stronger sales and marketing strategy, remains unfinished.

Meise may have resigned because he felt he had accomplished as much as he could at the company, a Banyan spokeswoman said.

Analysts said the move comes as a surprise and is not good news for the company, which they said aspires to go public as early as the end of the year. "It does not look good when a company loses its president and still hasn't been able to solve its marketing problems," said one analyst who asked not to be named.

Banyan's VINES network operating system is considered by some observers to be more technically advanced than products offered by from market leaders such as Novell, Inc., said Doug Gold, product manager of communications research at International Data Corp., a Framingham, Mass.-based market research firm. But the company has not gotten the word out to enough users, he said.

David Terrie, president of Newport Consulting in Scituate, Mass., said Banyan's marketing problems are "an old knock

(continued on page 12)

Computer Sciences Corp.'s Thomas Gerrity

CSC launches commercial systems integration group

Merges four business units, eyes mart leadership.

By Bob Brown
Senior Writer

EL SEGUNDO, Calif. — Computer Sciences Corp. (CSC) recently announced the formation of a new commercial systems integration business group in a bid to become one of the top players in this market by 1995.

The Commercial Systems Group has been formed "to coordinate and focus" the operations of four existing CSC business units, said Thomas Gerrity, who was named president of the group and a corporate vice-president. Gerrity joined CSC in October 1988, when CSC acquired his Cambridge, Mass.-based consulting firm Index Group, Inc.

He said CSC restructured its commercial systems businesses to compete more effectively with increasingly aggressive systems integration rivals such as Arthur Andersen & Co. and IBM ("Systems integration options on the rise," *NW*, Feb. 27).

CSC has offered systems integration services to commercial users for the past five years, Gerrity said. The company offers planning, design, installation and maintenance of data and voice networks.

The Commercial Systems Group includes: Index Group, consultants on information technology strategies; CSC Partners, Inc., computer and network system developers and integrators; Communications Industry Services, a software development organization; and CSC's European operations. The Commercial Systems Group will employ some 1,700 people.

CSC booked $375 million in commercial systems contract orders in fiscal 1989, and its revenue growth in the commercial sector has averaged 55% annually for the last five years, said CSC Chairman and President William Hoover. The company's commercial systems business had about $170 million in revenue for fiscal 1989, which ended March 31, and is aiming for some $250 million in revenue for fiscal 1990.

"We've positioned ourselves to become one of the top two or three commercial systems integrators in the U.S. and Europe within five years," he said.

CSC reported about $1.3 billion in revenue for fiscal 1989, with contracts for systems integration with government agencies accounting for about 70% of that revenue, Hoover said.

> CSC is highly regarded in the federal systems integration market.

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CSC is highly regarded in the federal systems integration market, and its increased focus on the commercial market is likely to pay off for the company, said Jeffrey Kaplan, director of network and professional services for The Ledgeway Group, Inc., a Lexington, Mass.-based market research and consulting firm.

"Anyone who knows systems integration knows Computer Sciences is no Johnny-come-lately," Kaplan said. "The real question for them is how to transfer their expertise in the federal sector to the commercial sector."

RBHCs play limited role

continued from page 11

Existing vendors of voice mail products realize that the RBHCs' target market could be a big one and have started pushing their products to the carriers, French said. VMX, Inc., a San Jose-based voice-messaging firm, formed a new business group last December dedicated to working with the RBHCs to determine their voice-messaging needs, she said.

"It is unlikely that the RBHCs will cut into existing voice mail service providers' market share," French said. Existing players tend to sell to larger users, whereas the RBHCs are aiming toward "creating new markets by selling to smaller users," she said.

The RBHCs' current and planned voice-messaging offerings will compete with services sold by small, regional voice-messaging service providers, French added.

John Gunter, BellSouth Corp.'s vice-president for information services and market plans, said his company is currently conducting a voice mail service trial in Palm Beach, Fla. He said BellSouth expects a rapid payoff in this market.

"We should see the quickest results from voice-messaging services because you've already got a service people are reasonably familiar with in answering machines. Also, using the phone is a very natural thing, whereas typing on a keyboard is not for most people."

RBHC gateway services are designed to give users with personal computers or terminals access to a variety of information services, such as weather updates and sports news, through a menu system.

BellSouth's John Gunter

Hard to use

But the current RBHC gateway services are too hard to use, according to analysts. The interfaces into the various information services listed on a menu are often different and confusing, and have failed to impress industry watchers.

"The impact of the RBHCs in the gateway market at this point is little if any, but I think the RBHCs could play a very significant role by the year 2000," said Joshua Harris, president of Jupiter Communications Co., a New York-based consulting firm that follows the videotex market.

"The services in general are still too hard to use," Harris said. The RBHCs that provide simple interfaces and cheap terminals through third-party vendors will be best off, he added.

The RBHCs are proceeding with gateway services because they will increase usage of information services and, thus, local net traffic, analysts said. In addition, they are hoping they will be able to provide content-based information services through their gateways, analysts said.

A number of the RBHCs, including Ameritech and BellSouth, already have gateway services that provide access to information services. Nynex Corp. recently introduced its InfoLook public network gateway service in New York.

Representatives of these companies said the services have so far met with a good reception but add that it is too soon to predict how successful the gateways will ultimately be.

"I'm not sure consumers are ready for information services just yet," said John Geary, district manager for information industry marketing at Southwestern Bell Telephone Co. in St. Louis. "We are looking at the longer view in the gateway market." Southwestern Bell is currently conducting gateway trials for videotex services.

BellSouth's Gunter said his company's TranstexT Universal Gateway service in Atlanta has already had a demonstrable impact on that market. Since BellSouth entered the gateway market, several local businesses, including a hospital, have offered information services that are now sold via the TranstexT service, he said.

The RBHCs have the greatest chance of making an immediate impact on the local market with their current gateway offerings, Gunter said.

Modified Final Judgment restrictions on providing inter-local access and transport area services will prevent them from competing successfully with national gateway companies, he added.

Analysts were in agreement that the RBHCs have barely scratched the surface of the gateway market. The RBHCs' future success "will revolve around how quickly and how well they develop marketing expertise," said Peter Bernstein, senior analyst at Probe Research, Inc., a Cedar Knolls, N.J.-based market research firm.

E-mail

The RBHCs have had even less impact in the electronic messaging market, RBHC officials and analysts concurred.

At this point, it is likely that electronic messaging services will go hand in hand with gateway services, Southwestern Bell's Geary said. This is because both types of service require users to work with terminals or personal computers, he said.

As a result, RBHC E-mail and EDI services might not hit the market until gateway services are more widely accepted, he said.

E-mail recently became an option on Bell Atlantic's Philadelphia-area Gateway Service, a company spokeswoman said. But it is too early to gauge its acceptance, she said.

The future

The information services age appears to be at least a few years off, according to analysts and RBHC officials. Because of their switching and bridging abilities and their mass market appeal, the RBHCs should be able to succeed by offering flexible services that no one else can provide, they said.

"It's too early to tell what [the RBHCs'] significance is" in the information services industry, said Arthur Bushkin, a principal at the telecommunications practice of A.T. Kearney, Inc., a management consulting firm based in Chicago. "The more interesting question is where they will be in the year 2000."

A look at RBHC information services

RBHC	Voice mail and voice-messaging services	Gateways providing access to information services	Electronic messaging services, including E-mail and EDI
Ameritech	Acquired Tigon Corp., a leading voice-messaging service company, in October 1988. Also conducting voice mail trial for residential and small business customers.	Offers Touch Four and Smart Call audiotex gateway services.	
Bell Atlantic Corp.	Offers Answer Call and Voice Mail voice mail services.	Offers Gateway Service that lists information service providers.	Reselling Telenet Communications Corp. Telemail E-mail service. It is accessible via Gateway Service.
BellSouth Corp.	Conducting voice mail and messaging trials.	Offers TranstexT Universal Gateway Service that lists information service providers.	
Nynex Corp.		Offers InfoLook gateway service which provides menu of information services.	
Pacific Telesis Group	Offers Pacific Bell Voice Mail and Pacific Bell Message Center. Voice mail is for large business customers; voice message center is aimed at small business and residential users.		Pacific Bell is conducting a technology test of Pacific Bell Connection, an E-mail service.
Southwestern Bell Corp.	Conducting trials for voice messaging, voice mail and voice storable services.	Conducting gateway trial for accessing audiotex and videotex information services.	
US West, Inc.	Offers US West Communications, Inc. Voice Messaging Service.		

Industry Briefs

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that should be reexamined." Banyan's expanded sales presence is impressive and the company's revenue and profits are on the rise, he said.

Following Meise's resignation, Banyan announced a restructuring of its upper management team, including the promotion of Rodger Weismann to senior vice-president of operations. Weismann was vice-president of finance and administration and chief financial officer.

The **OSI/Network Management Forum** announced the addition last week of four new associate members: **McDonnell Douglas Network Systems Co., Stratus Computer, Inc., Teknekron Communications Systems, Inc.,** and **Ungermann-Bass, Inc.**

The OSI/Network Management Forum is a consortium of net equipment vendors, service providers and users worldwide. The group was formed last July to help spur use of international standards for interconnection of network management systems.

Early this year, the consortium released a protocol specification based on the seven-layer Open Systems Interconnection model.

Study tracks fed spending on nets, IS

By Bob Brown
Senior Writer

VIENNA, Va. — The federal government plans to spend $18.5 billion on computer and communications-related operations in the 1990 fiscal year, up 5.5% from $17.5 billion during the current fiscal year, according to a new study.

The $18.5 billion figure includes expenditures on computer and communications products, network services, maintenance and personnel, according to Federal Sources, Inc., the market research firm that prepared the study titled "Your First Inside Look Into FY 90 Information Technology Spending."

Federal Sources, based here, estimated that Department of Defense spending will account for about half of the federal government's computer- and communications-related spending — some $8.9 billion — for the 1990 fiscal year beginning Oct. 1. The Pentagon will increase its spending in this area by about 6.7% over the current fiscal year's $8.3 billion, the report said.

The Department of Transportation is expected to increase its computer- and communications-related spending more than any other department. The department's spending will increase from $311,779 in fiscal 1989 to $374,397 in fiscal 1990, an increase of about 20%. Other increases are expected from the Environmental Protection Agency (16%), the Department of Justice (16%) and the National Aeronautics and Space Administration (12%), the study said.

The growth rates are much lower than they were in the early 1980s but "exceed industry expectations," said Robert Dornan, vice-president of Federal Sources. Spending growth hovered around 18% annually during the mid-1980s.

Cutbacks

Several agencies plan no growth or even cutbacks in communications-related equipment and service spending, the study said. Decreases are expected at the Department of Commerce (13%), the U.S. Marine Corps (11%) and the Department of Agriculture (8%).

The study also ranked the top vendors of computer and communications products and services to the federal government based on revenue for the year ended Sept. 30, 1988. Unisys Corp. took top honors with revenue of $674 million. AT&T had $573 million in revenue, IBM had $522 million, and General Motors Corp., which owns Electronic Data Systems Corp., had $425 million.

TELECOMMUNICATIONS

CARRIER SERVICES, CENTREX, CPE, WIRING SYSTEMS AND BYPASS

Worth Noting

Telecom*USA, Inc., an Atlanta-based regional carrier formed by the merger of Teleconnect Co. and SouthernNet, Inc., serves 400,000 customers in the Southeast, West and Midwest over a 3,000-mile digital microwave and fiber-optic network.

Carrier Watch

Pacific Bell has installed 19 Advanced D4 (AD4) systems in the Los Angeles area to automate the provisioning and maintenance of foreign exchange, WATS, digital data services and conditioned data lines, according to the manufacturer of the systems.

The AD4, made by Integrated Network Corp. (INC) of Bridgewater, N.J., will enable Pacific Bell to control and maintain circuits served by D4 channel banks.

Each AD4 can manage as many as 64 T-1 lines and more than 3,000 service end points from a central controller, which communicates with intelligent INC channel units in local or remote channel banks to set service options, align circuit parameters and conduct diagnostic tests.

The AD4 supports both point-to-point and hubbed T-1 applications, and it can be used for private and hybrid network applications. Pacific Bell has approved the AD4 for use throughout its California service area. Five other Bell operating companies are testing the system.

Pacific Bell also announced a two-year, $8 million agreement with Digital Sound Corp., a Santa Barbara, Calif.-based manufacturer of voice processing products, that will allow the BOC to offer voice mail service to companies in large cities. The service, called Pacific Bell Voice Mail, will use Digital Sound's VoiceServer 3110 and voice-messaging software to send, receive, redirect and store voice messages.

MCI's victory list

Customer	Pact value	Services
May		
Aetna Life & Casualty	NA	300-site Vnet
General Electric Co.	Multimillion dollar	Vnet, 800, private line
Westinghouse Communications Co.	$75 million to $100 million over seven years	Voice and data services
McDermott, Inc.	Multimillion dollar	81-site Vnet
April		
Chase Manhattan Bank, N.A.	NA	Domestic and international voice and data services
March		
Northwestern Mutual Life Insurance Co.	$3 million	NA
January		
Chrysler Corp.	NA	T-1 network
California Trucking Association	Could generate up to $500 million a year	NA

NA = Information not available

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: MCI COMMUNICATIONS CORP., WASHINGTON, D.C.

NTI to launch used equipment program

Move expected to bolster residual value of firm's PBXs, offer alternative to buying new switches.

By Bob Wallace
Senior Editor

DALLAS — Northern Telecom, Inc. will announce a formal secondary market program for PBXs at the International SL-1 Users Association (ISLUA) annual conference here June 5 to 9, according to analysts.

The program is expected to boost the residual value of Northern Telecom's private branch exchanges, give users a bona fide alternative to buying new switches and parts, and raise the profile of the used equipment market.

Northern Telecom is the only one of the top three switch makers without a formal secondary market program. AT&T launched its used equipment program in 1984. IBM/Rolm revealed its plan at the National Association of Telecommunications Dealers (NATD) annual conference last January. The NATD, which was established in 1986, represents more than 90 resellers, brokers and lessors in the U.S.

> "Users have exerted pressure on [Northern Telecom] to create a program."
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A Northern Telecom spokesman said the firm has not yet decided if it will make an announcement on the topic of used equipment at the user meeting.

Some industry sources say competitive pressures figured prominently in Northern Telecom's decision to create a secondary market program.

"They don't have any choice. Their chief competitors, AT&T and IBM/Rolm, already formally support used equipment," said Richard Kuehn, president of RAK Associates, a Cleveland-based consulting and research firm.

In addition, Kuehn and others claim that the residual value of the Northern Telecom Meridian SL-1 is substantially lower than that of the AT&T System 75. Supporting used equipment would gradually increase the residual value of Northern Telecom PBXs.

Others say customers have long tried to convince Northern Telecom to create a secondary market program.

"Users have exerted a tremendous amount of pressure on [Northern Telecom] to create a program. The market is already here, now they have to address it," said Bruce Jensen, president of Single Point of Contact, Inc., a Laguna Hills, Calif.-based used equipment dealer that already sells Northern Telecom wares.

Although Northern Telecom has not formally recognized the market, a number of Northern Telecom SL-1 users already buy used equipment, according to a recent study conducted by ISLUA. More than 70% of the 900

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AT&T revises SDN, aims to make it more competitive

Tweaks tariff to compete with MCI, US Sprint.

**By Anita Taff
and Bob Wallace**
Network World Staff

WASHINGTON, D.C. — In an effort to retain customers of its Software-Defined Network (SDN) service, AT&T last week filed a number of SDN tariff changes that make the service more competitive.

AT&T dropped SDN rates by an average of 4.2%, added contract options, lowered the minimum qualifying revenue level for the SDN Extended Volume Plan (EVP) from $30,000 a month to $20,000, and eliminated or restructured monthly and onetime charges.

Feeling the heat

The proposed tariff revisions are in response to rivals MCI Communications Corp. and US Sprint Communications Co., which offer competing virtual network services.

In its filing, AT&T said, "Both US Sprint and MCI offer services that are similar to SDN at lower prices, and both have a long record of successfully winning substantial business in direct competition with AT&T."

AT&T said its current SDN rates "are still nearly 10% higher overall than MCI's Vnet rates." This latest SDN rate cut "will reduce the differential to less than 5%, allowing AT&T to compete more effectively."

AT&T prices its SDN services according to the time of day, mileage and type of access. The carrier asked to reduce prices 8% for SDN customers using switched access on both ends of a call; 5.4% for customers using switched access on one end of a call and special access on the other; and 4.9% for those using special access on both ends of a call.

AT&T now offers SDN under three contract terms, but it asked the FCC to add two new options: a two-year contract that carries a $20,000 installation charge and a one-year contract with a $30,000 installation charge.

Existing contract options include basic SDN, which is offered in three-year terms, has limited features and does not carry an installation charge. Another option is full-feature SDN, which is offered on a month-to-month basis with an installation charge of $40,000, or on a three-year term with a charge of $10,000.

Restructuring the contract terms will make SDN more attractive to smaller customers, AT&T said, because it will lower the initial cost of purchasing service.

AT&T also made it easier for

(continued on page 16)

WASHINGTON UPDATE

BY ANITA TAFF

MCI attacks AT&T promos. MCI Communications Corp. last week continued its battle against AT&T's use of promotional tariffs by questioning whether the Federal Communications Commission acted properly earlier this month when it approved an umbrella promotion tariff.

The tariff allows AT&T to file promotions — which include reductions or waivers of monthly usage and onetime charges — that become effective within five days after the filing date. AT&T has offered a number of other limited-duration promotions for specific services since the beginning of the year.

Despite objections from users groups and rival carriers that the promotional tariff is another attempt by AT&T to deregulate itself, the FCC approved the tariff earlier this month.

Last week, MCI sent a letter to Gerald Brock, chief of the FCC's Common Carrier Bureau, questioning if he erred in approving the tariff.

MCI claims AT&T agreed in its filing to limit the value of its promotions to $50 million annually, yet the FCC's order never mentioned the $50 million cap.

MCI further said the order failed to specify how the promotional costs would be accounted for or how and when AT&T was to report the costs of its promotions.

MCI urged the FCC to address these problems so the Common Carrier Bureau "will be in a better position to show that it hasn't completely deregulated the dominant interexchange carrier via the tariff process."

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NY Tel. introduces central office-based ACD services

By Sarah Vandershaf
West Coast Correspondent

NEW YORK — New York Telephone Co. recently announced an automatic call distribution (ACD) service that will be offered from central office switch sites and support as many as 4,000 ACD agents.

The ACD service can be used alone, with the company's Intellipath II digital Centrex service or with a customer's private branch exchange, according to Anthony Tataseo, a New York Telephone product manager.

The service will evenly distribute incoming calls among sales or service agents so new calls go to unoccupied agents as soon as they are free to answer. Previously, Bell operating companies offered only Uniform Call Distributors (UCD), which do not always distribute calls equally among agents.

By housing the ACD equipment in its central offices, New York Telephone will relieve customers of paying for the equipment's power, space and maintenance, Tataseo said. And since call queuing occurs at the central office, customers will save on the number of trunks needed at their location, he said.

"Say you have 100 [agent] positions," Tataseo said. "That would generally require 20 or 30 additional lines to [the customer's site] for queuing." Calls can come into New York Telephone's ACD system over a variety of lines, including 800, WATS, foreign exchange, tie lines and direct T-1 trunks.

Customers can have New York Telephone add or remove lines to accommodate seasonal fluctuations in calls, Tataseo said.

New York Telephone's service will be available in New York state only.

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"Our service would offer a major advantage to a department store that has 100 [agent] positions and needs to hire 30 more people during Christmas," Tataseo said.

"If they had premises equipment, they'd have to keep their [extra] phones in the closet for the rest of the year," he said. Even though customers must contract their regular service for a year or longer, "we can give them a monthly rate for the extra phones" during the Christmas rush, he said.

The only equipment customers will need to install is a Compaq Computer Corp. personal computer for monitoring agents, Tataseo said. IBM Personal System/2s can be used as additional terminals, he said.

Customers will also need one voice line for every agent, who will need to use an ACD-Northern Telecom "P" feature phone, as well as a data link to connect the Compaq device with the telephone company switch. The data link will be used to track incoming calls and agents' responses and report on these events in one to two seconds. The reports can be used for making decisions on staffing, equipment purchases and net engineering.

New York Telephone's service will be available in New York state only. Targeted customers include banks, insurance companies, car rental and travel agencies, airlines, ticket outlets, mail order houses and utilities.

The service will handle 10 to 4,000 agents, and customers can contract service from one to 10 years at a time. "The average price will be $65 for a five-year contract," Tataseo said.

AT&T revises SDN

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users to qualify for volume discounts under SDN. Previously, users had to generate $30,000 in domestic traffic each month to receive a discount. Now, users with expenditures of $20,000 to $30,000 a month on either domestic or international SDN traffic will receive a 5% discount on domestic and a 4% discount on international traffic.

Customers with traffic levels between $30,000 and $300,000 per month will receive a 12% discount on domestic and a 10% discount on international traffic, and users that spend more than $300,000 per month get a 12% discount on both categories of service. Discounts are greater during subsequent years if users commit to multiyear contracts.

AT&T also proposed restructuring monthly charges for high-volume users by converting the current $12-per-month fixed charge for each SDN switched access line group to a $12 minimum usage charge during months when traffic exceeds 25,000 calls. If this level is not reached, the fixed $12 charge applies. The company also said it will eliminate a $185 handling charge for processing customer orders because users viewed it as a nuisance.

The tariff changes are scheduled to take effect June 30 pending Federal Communications Commission approval.

NTI to launch used equipment

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members that answered the survey said they have already purchased products from used equipment dealers, according to ISLUA President Gary Rea, telecommunications manager with Revco D.S., Inc. of Twinsburg, Ohio.

Formal secondary equipment programs require vendors to certify used switches, move and install the switches, extend warranties to cover the equipment, and service and support the switches. Certification testing determines whether a switch is configured as originally sold and if the switch is still operational.

Sources agree that Northern Telecom will introduce the plan but have different ideas about what it will entail.

Life is difficult for a number of used equipment dealers that already sell some used Northern Telecom switches and parts. They must write their own warranties to cover switches and bear the burden of certification testing.

At least one major used equipment dealer fears matters will worsen under the new plan, claiming that Northern Telecom may decide to lock it out of its secondary market program and sell used equipment through its authorized distributors and directly to users. Northern Telecom currently sells most of its PBXs through distributors. The only direct sales it conducts are along the East Coast.

"They have been adamantly against us since the start, and I don't see that changing. They'll sell used equipment themselves and through distributors," Jensen said.

Other dealers were more optimistic. "It'd be great to have all of the big three endorse the secondary market," said William Pinkerton, NATD president and president of National Telecommunications Equipment Corp., based in Farmington Hills, Mich. National Telecommunications Equipment sells some used Northern Telecom equipment, but it is not an authorized dealer.

ISLUA has already taken action in response to what it describes as a strong increase of user interest in the used equipment market. The users group meeting here next month will mark the first time used equipment dealers have exhibited at the conference, Rea said.

The meeting, which Rea estimated will attract 1,100 attendees representing 1,000 corporations and schools around the world, will feature a seminar on used equipment.

MCI unveils inexpensive ring-down

By Gail Runnoe
Washington Correspondent

WASHINGTON, D.C. — MCI Communications Corp. last week announced a digital automatic ring-down service linking New York and Chicago at a price the company claims is nearly 30% lower than what AT&T charges for its comparable service.

MCI Financial Connection, the company's first ring-down offering, is a point-to-point voice service that enables a user to place a call by simply picking up the telephone.

The company is initially targeting the service at brokerage houses, banks and institutional investment firms in the two cities, said Terry Geier, MCI's product manager. Eventually, the company plans to offer the service throughout the country.

AT&T has provided a similar automatic ring-down capability nationwide for decades as part of its voice-grade private-line service, an AT&T spokeswoman said.

Customers have been moving away from the service in favor of options such as private branch exchange-provided speed dialing, which provides fast connection without limiting the user to a single access point, she said.

US Sprint Communications Co. also provides an automatic ring-down service but stopped marketing the feature to new customers early last year. A spokesman said the company continues to provide the service to existing customers and may begin to remarket it soon.

The company declined to discuss why the automatic ring-down offering was discontinued or when it might be available again.

Nathan Kantor, president of MCI's Northeast Division, said MCI Financial Connection will be operational within 30 days after a user signs up for the service.

Eventually, the company plans to offer the service throughout the country.

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One reason MCI can install the service so quickly, Geier explained, is that it is using alternate access providers for local connections instead of working with the regional Bell holding companies.

Local access is being provided by Teleport Communications — New York and Metropolitan Fiber Systems in Chicago.

Geier explained that MCI chose to work with Teleport and Metro Fiber Systems because the companies promised quicker turnaround time on installation. "The bottom line was flexibility," she said.

According to Geier, MCI Financial Connection is available for a $620-per-circuit flat monthly charge, including local access. When MCI Financial Connection is offered in other cities, new flat monthly rates will be calculated based on the distance between end points, she said.

Pricing

AT&T said its long-distance charges for an automatic ring-down connection between New York and Chicago are $552.40 per month for a voice-grade private line and $476 monthly for a digital 64K bit/sec Accunet Spectrum of Digital Services link.

According to Geier, the service is available for a $620-per-circuit flat monthly charge.

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These prices do not include local access charges, which typically account for up to 50% of the price of a long-distance call. MCI said that once local access charges are taken into account, its service price is 29% lower than AT&T's, on average.

MCI Financial Connection also entails a $375 onetime local access installation charge for single DS0 lines or a $3,100 installation charge for a T-1 line, which can support 24 automatic ring-down circuits.

Jane Laino, president of Corporate Communications Consultants, Inc. in New York, projected that MCI Financial Connection will face some skepticism among users in the financial community. "Before the big players get in, they'll have to be sure it's reliable," she said.

Though financial companies rely heavily on private-line services, Laino said, the financial services market itself may be shrinking. "It's not my perception that the market is growing," she said. "In fact, there's been a lot of consolidation."

Michael Berzein, telecommunications manager for the Commodity Exchange Center in New York, said that even by offering rates 29% lower than AT&T's service, MCI will probably be unable to draw existing AT&T users into the fold.

For many customers, the discount would not be big enough to risk a possible service disruption, he said.

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

"Fractional T-1 is going to be a very big seller . . . It doesn't take any brains to know what users of the 56K bit [Dataphone Digital Service] lines are going to do. They're going to pick up the phone."

Frank Dzubeck
President
Communications Network
Architects, Inc.
Washington, D.C.

Data Packets

Hughes Network Systems, Inc. earlier this month offered new net management capabilities and a multipoint data broadcast feature for its X.25-based Integrated Packet Network (IPN) product.

Hughes said IPN now supports an interface to NetView/PC, IBM's link between third-party network devices and its NetView host-based net management software. With the IPN interface, a NetView operator can monitor IPN directly from a NetView host, eliminating the need to work with multiple net management systems.

The company also announced the Packet Network Broadcast Facility, which allows a user to transmit data from one site to multiple sites simultaneously. The facility can be used to send time-sensitive information, such as stock quotes, to many users at the same time. Hughes is the first packet vendor to offer such a capability, according to a company spokeswoman.

The NetView/PC interface will be available in the third quarter of 1989. The broadcast facility will be available in the fourth quarter. Hughes said it will announce pricing for the new products within 45 days.

Hughes is located at 11717 Exploration Lane, Germantown, Md. 20874, or call (301) 428-5500. ◼

Touch unveils OSI package for air traffic control net

IBM will run the software on RTs in FAA project.

By Paul Desmond
Senior Writer

CAMPBELL, Calif. — Touch Communications, Inc. recently announced it will supply OSI-based networking software to IBM for its massive upgrade of the Federal Aviation Administration's air traffic control network.

Touch Communications, based here, will provide Open Systems Interconnection software — from the network layer to the application layer — to run on IBM RT Personal Computers that will be used in the $3.6 billion FAA Advanced Automation System (AAS) project.

OSI-based software will include Directory Services, Network Management and Remote Operation Service Element (ROSE), which is a protocol and application program interface (API) that allows applications to share data.

The goal of the AAS project is to integrate the FAA's current hardware and software into a more uniform, OSI-based net that will ease expansion and maintenance. The FAA network will support access to a variety of applications from a single workstation, replacing the application-specific terminals that exist today.

A key to that widespread access will be the software provided by Touch Communications, said Subhash Bal, vice-president of marketing for the company.

The software will provide the connection from the RTs, running under IBM's AIX operating system, to 16M bit/sec IBM Token-Ring Networks located in airport control towers and in control centers between airports, Bal said. In addition, it will link the Token-Rings to an X.25 backbone that will tie all sites together.

Touch Communications will provide an X.500-based directory services application, tailored for the AAS network, to keep track of

(continued on page 20)

DATA DIALOGUE

BY JOSEPH MOHEN

When can a PC blow out a mainframe?

Parochial schools have always taught the story of David and Goliath, yet it is hard to believe a little guy can beat up a big guy. But it does happen with people, and it can happen with computers too.

A common concern among network planners has always been that a big computer might send data too fast to a terminal and blow out its buffers. A host, for example, can send data to a printer faster than a printer can print. Even if the printer has a large buffer, the host can overrun it, resulting in lost data.

To guard against overrun, a mechanism called pacing is used. Serial printers commonly use transmit on/transmit off (XON/XOFF) pacing, sending an XOFF to the host when buffers are full. Once there is room to receive more information, XON is sent to the host and transmission resumes. Pacing is also defined in net architectures such as the Open Systems Interconnection network model and IBM's Systems Network Architecture. Anytime a big computer sends bulk data to a personal computer, pacing is used to guard against overrun.

Yet the thought that a terminal or personal computer could blow out a mainframe has been unthinkable. Mainframes and front-end processors have seemingly limitless memory these days. Besides, the line speeds of a personal computer-to-host link are not fast enough to do much damage.

Last week, the unthinkable happened.

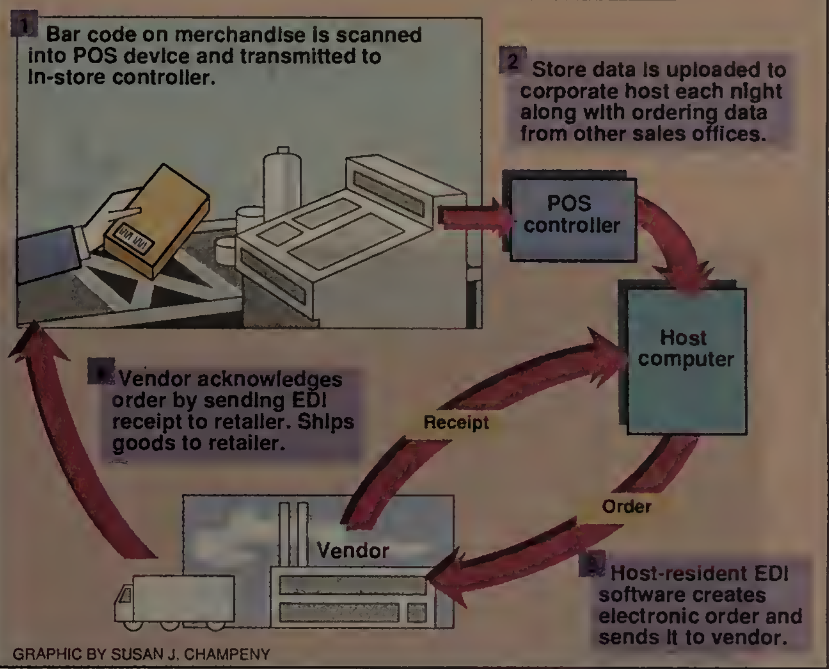
The PC did it

An employee with a large semiconductor manufacturer called to complain that a microcomputer-to-mainframe file transfer he was doing was causing his network control program (NCP) to go into slowdown, a situation whereby an NCP avoids a short-on-storage crash by refusing to accept new messages on any

(continued on page 20)

Mohen is an SNA specialist and consultant in New York.

Quick Response technology


1 Bar code on merchandise is scanned into POS device and transmitted to in-store controller.
2 Store data is uploaded to corporate host each night along with ordering data from other sales offices.
POS controller
Host computer
Host-resident EDI software creates electronic order and sends it to vendor.
Order
Vendor
Receipt
Vendor acknowledges order by sending EDI receipt to retailer. Ships goods to retailer.

GRAPHIC BY SUSAN J. CHAMPENEY

Retailers see future in Quick Response

The new technology cuts reordering time by using UPCs to track sales and inventory levels.

By Bob Brown
Senior Writer

The general merchandise retail industry could save $9.6 billion dollars a year and improve customer service by implementing "Quick Response" technologies and business strategies, according to a recent study.

Quick Response, retail's answer to the automotive industry's just-in-time manufacturing practice, helps general merchandise retailers keep their shelves stocked with best-selling goods from season to season ("EDI quick response keeps retailers' shelves stocked," *NW*, Oct. 10, 1988).

Quick Response is based on technology that enables retailers to cut the time it takes to reorder merchandise by tracking sales and inventory levels using Universal Product Codes (UPC) on price tags.

Although Quick Response systems can be implemented in a number of ways, typically UPC tags are scanned at the point of sale and the information is forwarded to an in-store controller.

Once a day, sales data is sent to a central host computer equipped with electronic data interchange software. When product supplies run low, the host automatically creates and sends an ANSI X12 EDI purchase order to suppliers via an in-house, vendor or third-party network.

A recent study by Andersen Consulting, a division of Arthur Andersen & Co., found that Quick Response could save individual retailers millions of dollars by decreasing distribution, administrative, merchandise and inventory costs. The study, called "The Costs and Benefits to Retailers of Implementing Quick Response and Supporting Technologies," surveyed 75 retailers and was commissioned by the Voluntary Interindustry Communications Standards Committee.

"No one has to convince retailers of the benefits of using the technologies associated with Quick Response," said Larry Beckerman, a manager in the retail consulting department of Andersen Consulting in New York.

The Andersen Consulting study estimated that average annual savings from industrywide implementation of Quick Response would be equivalent to 5.3% of sales for mass merchants, 4.9% of sales for department stores and 5% of sales for specialty stores.

"No one has to convince retailers of the benefits of using Quick Response."

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But some companies implementing Quick Response are experiencing sales gains of 20% and are able to take markdowns on 30% less merchandise because they are better able to stock shelves with more popular goods, the study said.

Another recent study, con-

(continued on page 20)

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Proposed V.42bis standard heralds speedier modems

Modems conforming to V.42bis are in the wings.

By John Cox
Senior Editor

Modem makers are scrambling to ready products that conform to a data compression algorithm expected to be approved by year end as the new CCITT international standard.

The proposed standard, called V.42bis, will boost the throughput of full-duplex modems by two to four times in most cases, according to members of the Consultative Committee on International Telephony and Telegraphy's Study Group 17 (SG17), which finalized the proposal last March.

V.42bis eventually will replace — at least in V.42 error-correcting modems — several proprietary data compression protocols such as Adaptive Compression Technology, Inc.'s CommPressor, Hayes Microcomputer Products, Inc.'s Adaptive Data Compression and Microcom, Inc.'s Microcom Network Protocol.

The proposed V.42bis standard drew no objections at SG17's last meeting in Geneva in March. When the standards group meets again this September, SG17 will make use of new CCITT rules that allow for speedier standards approval. The V.42bis proposal is expected to become a formal standard soon thereafter.

Into the modem pool

Manufacturers are likely to be close behind with new modems or upgrades that implement V.42bis compression. The group expects adoption of V.42bis by October, according to John Copeland, a member of SG17 and systems engineering vice-president for Hayes in Norcross, Ga.

"Considering the interest, it won't be very long [before] people start offering the modems." He declined to be specific about Hayes' plans.

Although users will pay more for V.42bis modems, they are likely to justify the expense. "It's a lot less expensive to increase throughput with data compression than by going to a higher speed modem," Copeland said.

The manufacturers are interested in the algorithm because it allows for better performance and because V.42bis will enable different brands of error-correcting modems to communicate.

> "It's less expensive to increase throughput with data compression," Copeland said.

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V.42bis is based on the Lempel-Ziv compression algorithm developed by AT&T Bell Laboratories. The algorithm reads a string of characters and replaces the string with a code word, usually 10 to 12 bits in length.

"You get down to about three bits per character, vs. the normal 10 bits per character," Copeland said. "So you're increasing throughput by three to four times."

Recent work by Alan Clark, a researcher with British Telecommunications PLC's research laboratories, showed how Lempel-Ziv could achieve near optimum performance with relatively small amounts of processing power and memory, making it possible to implement the complex scheme more simply and efficiently than before.

"You can build compression into the modem without lots of hardware changes and the attendant costs," Clark said.

BTLZ wins out

Last October, the British firm submitted what it called the British Telecom Lempel-Ziv (BTLZ) algorithm to SG17, which tested the algorithm and the three others cited above on a wide range of different data files.

Members decided BTLZ was superior on all counts, said Ken Krechmer, a principal with Action Consulting of Palo Alto, Calif., and a U.S. delegate to SG17.

Copeland proposed a change that lets BTLZ turn itself off when it detects uncompressable data, such as encrypted data, and then back on again when regular data appears.

Besides performing as well or better than the others, BTLZ also can be implemented in modems with different amounts of processing power and memory, he said.

One notable feature of BTLZ is that it performs better with more of both resources. That means that users will be able to choose from an array of differently priced compression modems, depending on their needs, Krechmer said.

In addition, modems with different BTLZ implementations will be able to automatically negotiate a level of performance that lets them work with one another.

"All the manufacturers in SG17 are very enthusiastic because it means their V.42bis modems will work with other V.42bis modems," Copeland said. "In the past, you couldn't communicate between different data compression modems."

Touch unveils pack for FAA net

continued from page 17

end-user names and locations of various devices, Bal said.

"The major difference between us and some of the other protocol vendors is that we're not talking about just protocols," he said. "[Touch Communications is providing] protocols as applied to a given application and a given operating system. That's when it really becomes useful; otherwise, it's just the source code."

Touch Communications' net management application, based on OSI Common Management Information Protocol (CMIP) and Common Management Information Services (CMIS), was tailored to the FAA application. In each local network, one workstation will be designated as the network management console. Using the CMIP and CMIS protocols, the workstation will control other workstations on the net and collect statistical data, Bal said.

The management application will support more than the Token-Ring Networks, Bal said, but he declined to elaborate.

Applications using the ROSE protocol and API will be able to interact across the network, Bal said. For example, if a flight takes off late, information on the flight could be given to an intermediary control center that will take the data into account when handling air traffic in its area, he said.

The FAA network could help spur the acceptance of OSI by providing a concrete example of the networking model in practice, Bal said. Since the network will conform to OSI, future air control nets in other countries that are based on that group of standards could pass data to the FAA net, creating a global air traffic control net, he said.

When a PC blows out a mainframe

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link until it can reclaim enough buffers to breathe.

My first reaction was one of disbelief. "Oh sure," I thought, "the NCP could be in slowdown, but a PC is probably not the culprit." Far more likely is that the NCP was too big for the box. An NCP is a program. Every program is a certain number of bytes long, and every front-end processor has a fixed amount of available storage. The difference is available buffer space.

For example, suppose the NCP you create is 800K bytes, and suppose your front end has 1,000K bytes of memory. That would leave 200K bytes for buffers. (If the NCP takes up more storage than the front end has available, it will not even load.)

The new releases of NCP that came out last year drastically increased storage requirements. Some users went from having 300K bytes of buffers to only 50K bytes, an insufficient amount to run most networks. As a result, they were getting constant slowdowns. This is what I thought was happening. I insisted to the customer his NCP was too big for his box. The customer persisted, so my coworkers and I investigated further. There were some unusual details.

First, the personal computer was attached via a token-ring interface, as opposed to a modem. As a result, the microcomputer could transmit a hundred times faster than over a phone line, increasing the opportunity for it to eat up host buffers.

Also, the workstation was an independent logical unit. The personal computer, not the host, was initiating the session. It was sending a "BIND" request (BIND is the message sent to start an SNA session). This is rare because independent logical unit support is so new.

In such a scenario, the personal computer sets the pacing count that is supposed to throttle the session; in most other situations, the host would set the count.

The customer did a trace that showed the microcomputer was setting the pacing count to zero (in his BIND request). This is very bad. But even worse, the host VTAM application had the opportunity to override the pacing value to a nonzero value, and it did not.

Hence the session began with no pacing, unleashing a downstream token-ring node to run full throttle on a defenseless NCP. It shot messages at the NCP as fast as it could read its hard disk. In no time, the personal computer consumed half a megabyte of the NCP's buffers. Poor NCP.

The solution could take one of two forms. First, microcomputer products need to be more accountable than in the past. The ability to be the primary logical unit implies a responsibility to ensure that the session is paced. The IBM product involved did not. Yet, trying to get an IBM Personal Computer product changed is like trying to stop the rain.

The next solution would be to change the VTAM application, so that if it received a BIND request without pacing, it should force pacing. Since the host program was under our control, that is what we did. A personal computer using conventional dependent logical unit support would be less likely to crash an NCP, since VTAM itself will set the primary send pacing value.

The trend in this industry from hierarchical to peer architectures has its benefits. We cannot forget, however, that as restrictive as an omnipotent host was, it also protected us in the sense that small nodes could not wreak havoc on the network. Now they can.

I am happy that David can knock down Goliath. I only hope that he does this only when we want him too.

Retailers see Quick Response

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ducted by consulting firm Touche Ross International's Retail Services Group for the National Retail Merchants Association (NRMA), found that retailers of all sizes recognize the benefits of Quick Response and have plans to use UPC symbols and EDI.

"The [UPC and EDI] technologies are the base for Quick Response," said Joseph Miller, director of retail standards and technology for NRMA. "Once a company has the technologies in place, it can change its business practices and relationships."

The technologies alone cannot provide Quick Response benefits, users and industry watchers agreed.

"In addition to using at least one or two of the technologies, Quick Response users must have the spirit of Quick Response," said David Carlson, senior vice-president of corporate information systems at K mart Corp. in Troy, Mich.

"That means being willing to share more information about sales and inventory with your suppliers. Quick Response has to be a winning proposition for both the retailer and the supplier for it to work," Carlson said.

> "The [UPC and EDI] technologies are the base for Quick Response," Miller says.

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K mart has been using Quick Response for more than two years, Carlson said. The company, which processes thousands of EDI purchase orders a day through a central computer, has scanning devices in 1,250 of its 2,200 stores across the country and plans to increase its use of Quick Response in coming months.

"Companies that are using Quick Response are starting to see the competitive advantages of it," Carlson said. "They aren't speaking about their strategies in public like they have in the past couple of years."

Retailers must have the support of upper management to put a good Quick Response program in place because a hefty up-front investment is necessary, said Andersen Consulting's Beckerman. His firm's study said an initial industry investment of $3.6 billion would be needed to realize a savings of $9.6 billion.

LOCAL NETWORKING

PC AND TERMINAL-TO-HOST LANS, GATEWAYS AND MICRO COMMUNICATIONS PRODUCTS

Worth Noting

"NetWare 386 is going to mean a lot to network computing and its adaptation into the MIS world. The improved security is very important, and you're going to be able to load multiple protocol stacks at one time to get a heterogeneous computing environment."

David Perro
Industry analyst
Dataquest, Inc.
San Jose, Calif.

Netnotes

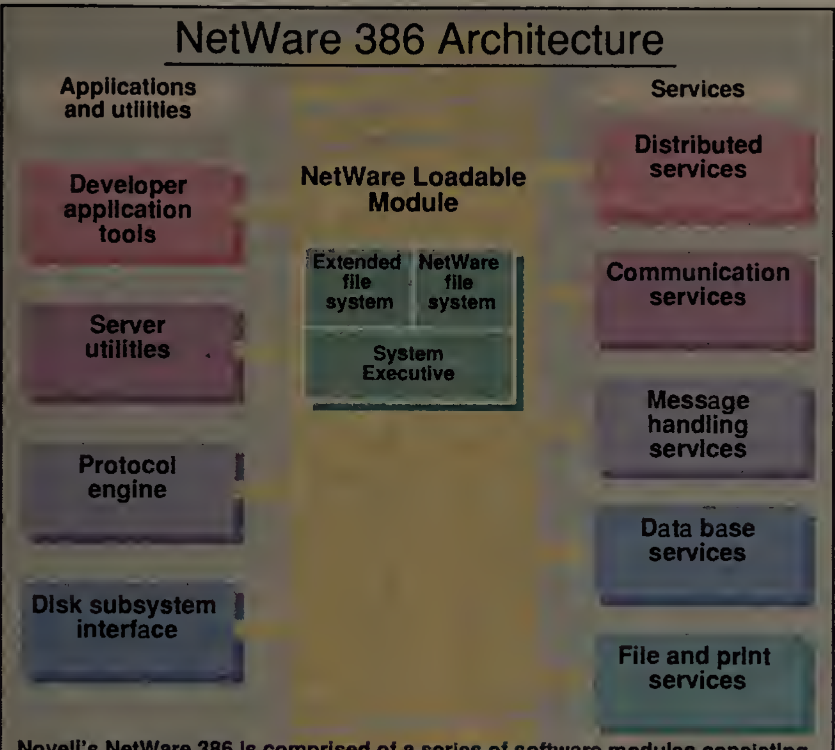
3Com Corp. last week certified **Ashton-Tate Corp.** and **Microsoft Corp.**'s SQL Server as fully compatible with 3Com's 3+Open LAN Manager network operating system.

SQL Server, which began shipping at the end of April, is a relational data base server for personal computer local nets. It enables MS-DOS- and OS/2-based applications to access multiuser data bases over a local network.

The compatibility certification ensures that SQL Server will work in a 3+Open net using the Named Pipes application program interface (API), said Alan Kessler, director of marketing for 3Com's Software Products Division.

Kessler said SQL Server's high-speed transaction processing capabilities will allow users to run sophisticated applications such as order entry and accounting spreadsheets on their personal computer local nets.

"The fact that SQL Server is certified compatible with 3+Open means that net managers and end users can be sure that it will install easily and it will work," Kessler said. Because SQL Server uses LAN Manager-specific APIs, it is easier to use on LAN Manager platforms, such as 3+Open, than on other network operating systems, he said.



Novell's NetWare 386 is comprised of a series of software modules consisting of network services, applications development tools and a protocol engine.

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: NOVELL, INC., PROVO, UTAH

Programming tools give new NOS edge

Novell seeks to make NetWare 386 developers' platform of choice for distributed applications.

By Susan Breidenbach
West Coast Bureau Chief

SAN FRANCISCO — Along with the introduction of NetWare 386 here earlier this month, Novell, Inc. unveiled programming tools that received little notice amid the fanfare surrounding the powerful new network operating system.

But the programming tools could prove equally important as the network computing era of the 1990s unfolds.

Novell wrote the book on high-performance file servers in the 1980s, and it attained a two-thirds market share with its ability to deliver network services to the desktop faster and more efficiently than the competition. NetWare 386 promises to continue this tradition.

But Novell executives acknowledged that it will take more than a bigger and faster file server to assure NetWare's continued dominance. The key to success in the coming decade is getting developers to make NetWare 386 the platform of choice for the emerging class of distributed applications.

In the race between NetWare 386 and Microsoft's OS/2 LAN Manager, programmers' tool kits are "one of the wild cards" that will determine which environment applications developers select, said Nina Burns, a vice-president at Infonetics, Inc., a market research firm in Santa Clara, Calif. "The tool kits make it easier to develop distributed applications."

Novell is offering developers a NetWare Programmers Workbench that includes compilers and remote procedure call tools for building client- or server-based network applications.

"We're providing a straightforward C programming environment so developers don't have to learn any new programming techniques to produce sophisticated network applications," said Nancy Woodward, vice-president and general manager of Novell's Development Products Division.

This probably sounds too good to be true to programmers who have tackled Value-Added Processes (VAP) under NetWare 286. VAPs were introduced with NetWare 2.1 as facilities for creating server-based applications, but they have proven so difficult to write that few have appeared to date.

> In the race between NetWare 386 and OS/2 LAN Manager, tool kits are "the wild cards."
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However, NetWare 386 has a new modular architecture that has no need for unwieldy VAPs. Rather, all services, applications and utilities — whether from Novell or third parties — are written as NetWare Loadable Modules

(continued on page 22)

New net hubs link E-nets using fiber, twisted pair

David Systems hubs obviate need for coaxial ties.

By Laura DiDio
Senior Editor

SUNNYVALE, Calif. — David Systems, Inc. recently added two network hubs to its ExpressNet product family that let users connect Ethernets using unshielded twisted-pair and fiber-optic wiring.

The ExpressNet Fiber Optic Hub and the ExpressNet SuperHub are stand-alone intelligent devices.

The Fiber Optic Hub is designed to be used for building Ethernet backbones. It has four interface slots that can be used to connect existing Ethernets or SuperHubs. Multiple Fiber Optic Hubs can be linked to form a large campus network, according to Henry Nothhaft, president of David Systems.

The SuperHub is a 19-in. rack that accepts 10 interfaces, each with 12 ports that can be used to attach workstations via twisted-pair wire. A maximum of 108 users can be supported on a single SuperHub.

Users can link multiple SuperHubs to Fiber Optic Hubs. Prior to this, Nothhaft said, David Systems' ExpressNet hub devices could only support a maximum of 12 users on a single hub.

As a company decides to add users to its network, it can simply purchase additional 12-port printed circuit boards and install them in the SuperHub. Each additional board costs $2,495.

Both the FiberOptic and SuperHub devices will typically be installed in central wiring closets, where they will monitor and manage the flow of data over Ethernets. They will also serve as the interface between networked computing devices and the building cabling system.

Both the ExpressNet Fiber Optic Hub and the ExpressNet SuperHub contain an Intel Corp. 8051 microprocessor and a set of application-specific integrated circuits that perform all the functions of a typical multiport hub repeater. Multiport repeaters are stand-alone devices that manage the flow of data on an Ethernet network.

Network management capabilities are built into each hub, allowing physical-layer control of

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LANMARKS

BY ED COOPER

Today's net environment favors a specialized OS

As the first phase of network computing emerges, industry participants are beginning to agree on the kind of functions this technology will provide. Users are looking for heterogeneous networks, security, high performance and access to advanced networkwide services such as global directory services and network management.

However, industry confusion and concern is mounting as vendors put forth a variety of products offering a wide range of features and functions.

Logic dictates that there is only one way to meet the requirements of network computing: by basing network computing solutions on a highly specialized network operating system.

There are some very basic reasons for this:

- **Front end vs. back end.** There are two domains in network computing, the front end, or workstation environment, and the back end, or network server environment. Currently, few networking vendors distinguish between the two, choosing instead to provide a general-purpose operating system on both the server and the desktop. Such an approach can lead to reduced functionality and a series of design trade-offs.
- **General purpose vs. special purpose.** General-purpose operating systems were designed to handle common desktop computing tasks. Typically, a general-purpose operating system supports a large library of desktop workstation-specific commands and security.

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Cooper is senior director of marketing for Novell, Inc.'s NetWare Products Division.

UB builds FDDI backbones for Microsoft internal net

By Laura DiDio
Senior Editor

SANTA CLARA, Calif. — Ungermann-Bass, Inc. said last week it has completed the first phase of installation of a 100M bit/sec Fiber Distributed Data Interface (FDDI) backbone net for Microsoft Corp., one of its largest enterprise network customers.

The FDDI backbone net will interconnect more than 20 existing Ethernets in 10 buildings at Microsoft's headquarters in Redmond, Wash.

Building the FDDI network for Microsoft is part of a broader push by Ungermann-Bass to develop FDDI-related products for its Access/One system, said Ralph Ungermann, the company's president and chief executive officer. He said Ungermann-Bass is working to provide FDDI bridges that can be installed within the Access/One system.

Access/One, an intelligent network wiring concentrator that has been shipping since January, is the company's core network product. It provides centralized cable management to users that want to utilize existing telephone cable as a data transmission medium ("Access/One delivers varied net services," *NW*, April 17).

When equipped with the appropriate modules, Access/One can replace terminal servers and provide twisted-pair connections from personal computers and workstations to Ethernet and token-ring local nets. The Access/One unit can also be linked to either a coaxial or fiber-optic FDDI backbone, Ungermann said.

UB's Ralph Ungermann

In the Microsoft project, Ungermann-Bass will link Access/One units via an FDDI fiber backbone. Installation of Microsoft's FDDI network is slated to be completed by the end of 1989, Ungermann said. The network is being installed in tandem with the construction of several buildings.

Microsoft has already installed 62.5/125 micron multimode fiber-optic cabling between buildings, according to an Ungermann-Bass spokesman. Neither company would disclose the cost of the FDDI project.

In related news, SNET Systems of New Haven, Conn., signed an agreement last week to resell Ungermann-Bass' network equipment. SNET Systems, a subsidiary of Southern New England Telephone Co., markets communications equipment.

A spokesman for SNET Systems said the company will use Ungermann-Bass' Access/One system as the cornerstone of its "Smart Closet" concept, which will provide corporate end users with enterprisewide information services.

Hubs use fiber, twisted pair

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the network down to individual workstations. Should a problem occur on the network, the hubs' net management features allow the network manager to locate, isolate and disable whichever node is experiencing problems.

Typically, most Ethernets are based on a bus topology. This means that when one node on the network experiences a problem, it can bring the entire network down. By contrast, because the new hubs form a star configuration, the network administrator can perform individual fault isolation, Nothhaft said.

The hubs are based on the emerging 10Base T specification for 10M bit/sec Ethernet over unshielded twisted-pair cabling.

Using fiber-optic cabling, the Fiber Optic Hubs can be linked at a distance of up to half a mile. Hub devices that use unshielded twisted-pair wiring have a distance limitation of 330 feet between network nodes or devices such as gateways and routers, Nothhaft said. The Fiber Optic Hub can support more than 1,000 users when used as a backbone to link Ethernets.

"It's becoming commonplace to link local nets to a central campus backbone. And it's not unusual for these campuswide nets to span the distance of a mile," Nothhaft said.

The ExpressNet Fiber Optic Hub costs $1,780. It requires a fiber-optic medium attachment unit (FO-MAU), which lists for $450. The FO-MAU converts the Ethernet data transmission signal from thick-wire coaxial or fiber-optic cabling signals. The ExpressNet SuperHub sells for $995 and also requires an FO-MAU when connected to a Fiber Optic Hub. Both products are scheduled to begin shipping in June.

For more information, contact David Systems at 701 E. Evelyn Ave., Sunnyvale, Calif. 94086, or call (408) 720-8000.

Net environment favors special OS

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When an operating system designed to support the needs of a workstation user is force-fit into a networking environment and onto a server, you can be assured design trade-offs will have to be made. The general-purpose operating system is optimized for foreground tasks, such as graphics and windowing, at the expense of background tasks, such as data base and communications services.

General-purpose operating systems cannot provide the specialized protection of security without compromising the openness and ease of access required by end users and their applications.

Such operating systems cannot provide the file system services required to achieve competent fault tolerance without compromising compatibility with existing applications.

By contrast, a network operating system must support a high-transaction-rate environment, in which there are many users making concurrent demands on system resources. The operating system must be designed with security and fault tolerance in mind so that critical data is not lost if the hardware fails.

Another attribute of a well-designed network operating system is its ability to support all standard desktop computing environments, without requiring specialized software to be installed at the desktop. That means the network operating system must support all communications-related standards, such as adapter cards, transport protocols and client/server protocols.

The advantage to the end user of connecting to an optimized network operating system is that requests are simply answered faster.

In the world of networked computing, when a desktop or client-based operating system attempts to request information from a data base located on a network server, a special command is issued. That command is commonly referred to as the requestor or the client/server protocol. In simple terms, the client/server protocol is what allows a desktop application to seek information from a data base application located on a network server.

As is often the case in the computer industry, most operating system vendors decided to implement their own version of a client/server requestor protocol. Today, there are several "industry standards," including Network File System from Sun Microsystems, Inc.; Server Message Block from Microsoft Corp. and IBM; NetWare Core Protocol from Novell, Inc.; and Apple File Protocol from Apple Computer, Inc. An acid test of any "open" network operating system is its ability to accept and process multiple client/server protocols without adding any software on the desktop.

The advantage to the end user of an optimized OS is that requests are simply answered faster.

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Users don't want to learn new commands and new interfaces when asking for remote information. They don't even want to know where that information resides. They just want to get the information quickly and transparently.

To take this thought one step further, would you want an operating system on your network server that could only accept one type of client/server protocol, or would you want one that could accept multiple client/server protocols? If your company is like most large companies, you have an installed base that includes a little of everything: Suns in engineering, Personal System/2s in marketing and finance, Macintoshes in the graphics department and so on. A network operating system sits at the center of that wheel and, ideally, should be able to accommodate all the "industry standard" communications protocols.

Network computing, as opposed to work group computing, requires a specialized, mature, industry-proven network operating system. General-purpose operating system vs. specialized network operating system? The choice is yours. But if high performance, reliability/fault tolerance, security and the ability to accommodate today's communications standards is important, I believe the choice is clear.

Programming tools give NOS edge

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(NLM) that can be loaded and linked to the network operating system dynamically, without interfering with network operations.

A so-called NLM Software Bus serves as an interface between the NLMs and NetWare's Core System Executive. The Core System Executive allocates memory, grants access to the network's file system and schedules tasks via this bus.

The NLM software bus can be extended across multiple processors or servers, enabling the network administrator to segregate certain types of NetWare services from others.

Protocol engine

One important Novell-created NLM is a protocol engine that will free NetWare from its reliance on Novell's proprietary client/server and transport protocols. By using the appropriate application program interfaces, third parties will be able to plug any protocol into this new engine.

Device drivers for NetWare 386 also take the form of NLMs, whether they are provided by Novell or third parties.

The C Network Compiler/386 in the Programmers Workbench is designed to help developers build server-based applications that run as NLMs under NetWare 386. Both it and the C Network Compiler for developing front-end client applications are based on compiler technology that Novell licensed from Watcom Group, Inc., a 15-year-old compiler specialist in Waterloo, Ontario.

The tool kit for server applications includes an NLM linker, various debuggers, editors and libraries. It comes with an overview of the NetWare 386 architecture and a client/server tutorial. Also, the tool kit generates 32-bit source code that executes in the NetWare 386 server.

The C Network Compiler is designed to help programmers write "network aware" applications that execute on the client system. It also includes an editor, debugger, linker and assorted libraries, as well as an "express compiler" for prototyping applications. The tool kit also provides a tutorial that offers tips about incorporating network services in client applications.

The RPC

Another key piece of the Programmers Workbench is a version of Netwise, Inc.'s RPC tool for NetWare 386. The RPC tool generates communications code needed for applications on one system to trigger procedures on another system across the network.

"As the world moves toward client/server computing, Novell is well positioned," said Rich Edwards, a securities analyst for Robertson, Colman & Stephens in San Francisco. "The RPC tools and compilers make up a very attractive development environment; Microsoft won't have a 386 compiler for at least a year."

The NetWare Programmers Workbench will be available in late summer or early fall for $3,995. It includes a full copy of a prerelease version of NetWare 386 3.1, which won't be commercially available until early next year.

The compiler tool kits can also be purchased separately. C Network Compiler/386 is priced at $995 and the C Network Compiler costs $695.

Worth Noting

Merrill Lynch spends more on telecommunications than any other nongovernment user in New York, according to the report "Telecommunications and the Future of the World City" prepared by the Frank Stanton/Andrew Heiskell Center for Telecommunications Policy of the City University of New York.

Association Watch

The new **Universal Carrier Software (UCS)-250 Users Group** is soliciting corporate members. The group represents users of Northern Telecom, Inc.'s DMS-250 tandem switch UCS.

Currently made up of 17 interexchange carriers, the users group hopes to fill out its ranks with corporate users, said Lee Thibaudeau, director of operations at Schneider Communications, Inc., a Green Bay, Wis.-based telecommunications reseller and cofounder of the users group.

The UCS-250 Users Group plans to hold about four meetings a year with Northern Telecom executives. For more information, call Thibaudeau at (414) 498-7800.

At its annual conference in Dallas this month, the **International Communications Association** elected new officers. Taking over as president is Roy Bruce, manager of systems and communications at The Coca-Cola Co. New to the board are Jane Videtich, system development manager for R.J. Reynolds Tobacco, USA; Richard Fazzone, telecommunications affairs manager for General Electric Co.; and Henry Manning, a principal with McGladrey & Pullen, an accounting and consulting firm in Schaumburg, Ill. ◾

Cooperation key in dealing with systems integrators

Successful project can boost manager's stock.

By Wayne Eckerson
Staff Writer

As more users look for help in linking multivendor computer and communications systems, a growing number of network managers are being forced to work with systems integrators brought in by upper management.

For managers, that can spell opportunity or doom, depending on how they react to the situation, said consultants interviewed by *Network World.*

Network managers who feel threatened by the presence of outside "experts" may try to sabotage a systems integration project by withholding vital information or by attacking the credibility of the vendor. That may ease the network manager's resentment at having to share authority or being overlooked to head up a project, but it will backfire in the long run, consultants said.

A better approach is to cooperate fully with systems integrators to ensure the project is successful, according to consultants.

"The network manager always gets credit for the job once the systems integrator is gone," said Ronald Brown, an independent communications consultant in Melrose, Mass.

By working closely with systems integrators, network managers can influence the direction of the project and enhance their position within the company.

Network managers who resist systems integrators could be left with an inefficient network or with serious problems that only the systems integrator knows how to solve. They also place themselves in an adversarial role with the senior executives who hired the systems integrator, consultants said.

Opportunity of a lifetime

The systems integration market last year was valued at $6 billion and is expected to climb to

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EXECUTIVE BRIEFS

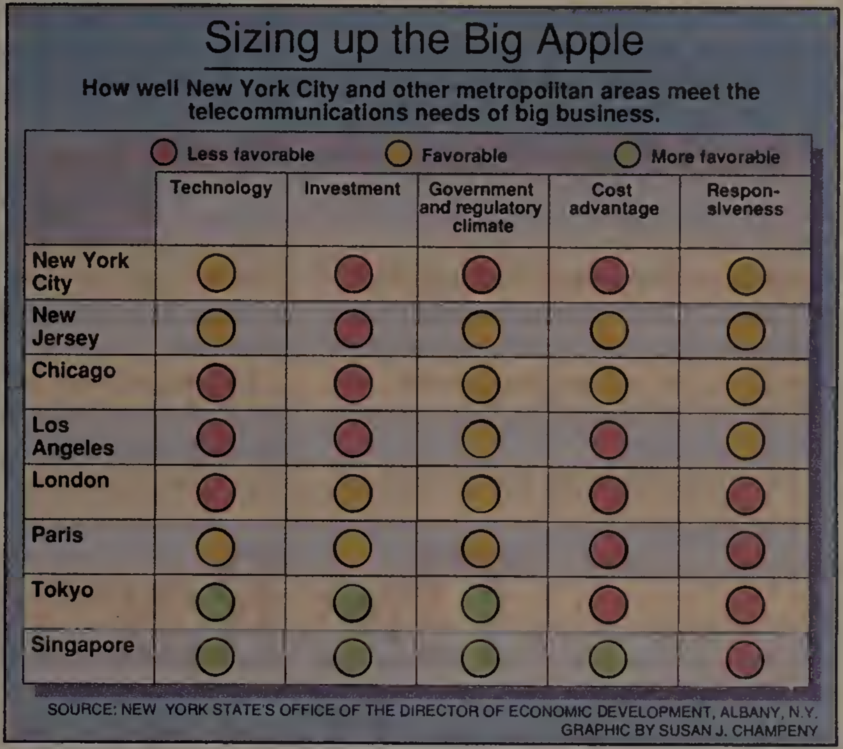
BY WAYNE ECKERSON

Choosing the right integrator. Network managers generally agree that most companies don't have the in-house expertise needed to accomplish large-scale systems integration projects. As a result, many companies are paying hundreds of thousands of dollars to systems integrators to oversee such complex networking projects.

Nathan Muller, manager of consultant relations at General DataComm, Inc. in Middlebury, Conn., suggests that net managers evaluate systems integrators on several criteria before signing a contract ("A guide to taking the risk out of purchasing," *NW,* Feb. 27). Muller is the author of *Minimum Risk Strategy for Acquiring Communications Equipment and Services* (Norwood, Mass.: Artech House, 1989).

Here are some of Muller's tips:

- Carefully check references to determine the quality of the vendor's products and services, responsiveness to changing customer requirements and general customer satisfaction. Find out whether claims of "innovative" technology are fact or marketing jargon and determine if the vendor has completed projects on time and within agreed-upon budgets.
- Evaluate the vendor's expertise in network design, engineering and implementation of large digital transport systems. Discover whether the vendor has experience building hybrid networks and integrating local networks to wide-area networks using devices such as gateways, bridges and routers.
- Make sure the vendor has experience linking voice and data networks with microwave and satellite systems.
- Evaluate the vendor's experience in building net management systems that unify computer and communications resources. Systems integrators need to be able to link AT&T's Unified Network Management Architecture with IBM's NetView. Few do.
- Determine whether the project management team has broad experience in all facets of data and voice communications, including system design, product development, integration, installation, change management and problem resolution. ◾



Sizing up the Big Apple

How well New York City and other metropolitan areas meet the telecommunications needs of big business.

🔴 Less favorable 🟡 Favorable 🟢 More favorable

	Technology	Investment	Government and regulatory climate	Cost advantage	Responsiveness
New York City	🟡	🔴	🔴	🔴	🟡
New Jersey	🟡	🔴	🟡	🟡	🟡
Chicago	🔴	🔴	🟡	🟡	🟡
Los Angeles	🔴	🔴	🟡	🔴	🟡
London	🔴	🟡	🟡	🔴	🔴
Paris	🟡	🟡	🟡	🔴	🔴
Tokyo	🟢	🟢	🟢	🔴	🔴
Singapore	🟢	🟢	🟢	🟢	🔴

SOURCE: NEW YORK STATE'S OFFICE OF THE DIRECTOR OF ECONOMIC DEVELOPMENT, ALBANY, N.Y.
GRAPHIC BY SUSAN J. CHAMPENY

NY's business future linked to public nets

Citing lagging telecom facilities, reports raise prospect of declining status, business exodus.

By Barton Crockett
Senior Editor

NEW YORK — The expanding power and declining cost of public network services is making it easier for companies to move operations out of expensive urban areas, a trend that threatens to squeeze jobs and pull business away from the Big Apple.

That's the conclusion of the study "Telecommunications and the Future of the World City," which was prepared by the Frank Stanton/Andrew Heiskell Center for Telecommunications Policy of the City University of New York. The study was presented here at a recent conference sponsored by the center entitled "The Struggle for Leadership: Telecommunications Policy in New York."

Two other studies presented at the conference said New York's telecommunications infrastructure lags behind those of other cities and warned that the technological gap could put financial services firms here at a competitive disadvantage.

One study, "New York's Future in Financial Services," was prepared by New York Gov. Mario Cuomo's Advisory Panel on Financial Services.

The other, "A Strategic Plan for Telecommunications in New York City," was put together by The New York City Partnership, Inc., a government and industry consortium.

"Decoupling" Manhattan

Concern over the continued economic health of New York and the role of telecommunications has increased because of a series of highly publicized corporate relocations, according to Helen Birenbaum, executive director of the Stanton/Heiskell Center. J.C. Penney Co., Inc., Citicorp and Merrill Lynch, Pierce, Fenner & Smith, Inc., among others, have moved headquarters or major offices out of New York in recent years.

Birenbaum said civic leaders fear network technology may be facilitating these moves, slowly turning New York into something of a ghost town, at least for certain low-wage positions.

In part, the Stanton/Heiskell report reinforced this fear. Increasingly, it said, corporations in major cities across the globe are moving jobs out of expensive downtown offices and into less expensive areas, connecting the operations to their urban offices via communications links. The report dubbed this trend "decoupling."

> Civic leaders fear net technology may be facilitating these corporate moves.

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"Decoupling is a good term [because it] captures the potential impact of telecommunications on downtown employment," the report said. "If parts of an operation can be separated

(continued on page 24)

NY's business future linked to public nets

continued from page 23

because they can be linked via communications, then those parts that have no reason to be downtown can be located where rents are cheaper, wages lower, etc."

The Stanton/Heiskell study illustrated this theory with a case study of Merrill Lynch, which recently moved part of its data processing operations from lower Manhattan to Princeton, N.J., and Staten Island.

The report said Merrill Lynch found little reason to keep its massive data center in Manhattan since it could be run more efficiently on less expensive real estate and still support traders in New York via communications links.

This move led to the loss of some DP jobs in Manhattan, the report said. Highly paid financial executives remained in the city, since meeting with other executives and trading on exchanges here is a vital part of their jobs.

Fear of failure

The reports by the New York Partnership and Gov. Cuomo's Financial Task Force warned that the city needs to improve its public network to keep from losing its position as the premier world financial center.

Both reports said the public network in New York fares poorly when compared to financial centers such as London, Paris, Tokyo and Singapore. Soon these cities may be able to support such things as Integrated Services Digital Network, advanced graphics services and high-speed facsimile more readily than New York, the reports said.

In addition, competing states such as New Jersey and Connecticut are offering tax breaks and adopting other regulatory changes to make their telecommunications environment more attractive to big business, according to the reports.

According to Mary Malloy, policy analyst with New York State's Department of Economic Development and program coordinator for the Financial Services Task Force, a disparity in network capabilities could give financial services companies in foreign cities an edge over firms located in New York.

"Networks are a vital part of their jobs, and these companies need the best they can get to stay competitive," she said. "If the disparity persists, it's easy to envision a situation where financial activity in New York declines and moves to areas with better networks, like Tokyo."

To avoid this, the governor's Financial Task Force recommended several policy changes, including altering depreciation provisions in tax codes so that new equipment can be installed in the public network sooner; evaluating the need for the state to assist in modernizing the Society for Worldwide Interbank Financial Telecommunication (SWIFT) international electronic payments network; and having the state work more closely with carriers and financial services companies to assure adequate network security and disaster recovery capabilities. ◼

Cooperation key with systems integrators

continued from page 23

$15.7 billion annually by 1993, a growth rate of 25%, according to Input, a Mountain View, Calif., research firm.

In most cases, network managers welcome outside help because they and their staffs are usually overworked, said Nathan Muller, manager of consultant relations at General DataComm, Inc. in Middlebury, Conn.

However, in any network staff, there is usually at least one person who feels threatened by an outside consultant, Muller said. The person might resent having territory invaded or being overlooked to manage the project, he said.

"I have seen many net managers react defensively when a systems integrator is brought in, not realizing they have been given the opportunity of a lifetime," said Patrick Springer, director of strategic services consulting at Telecommunications Management Corp. in Needham, Mass.

"Astute managers realize that the presence of a systems integrator affords them the perfect forum to voice ideas that upper management hasn't been receptive to in the past. Also, by working with systems integrators, network managers can demonstrate to upper management that they can bring a complex project to fruition," he said.

In many cases, the result is that a network manager is given a more senior position in the company or is offered a job with the systems integrator, Springer said.

Jack Epstein, president of Maxi-Micro, Inc., a consulting firm in Great Neck, N.Y., said network managers need to work closely with a systems integrator because the manager will have ultimate operational responsibility for the network once the systems integrator leaves. A network manager must know what the systems integrator has done in order to understand how best to manage the network in the long term, he said.

"If you can't lick them, you'd better join them," he said.

Often, network managers who seek out and hire systems integrators advance further in their organizations, Springer said. Instead of resisting outside help, a mature network manager will seek the aid of systems integrators when their services are more cost-effective than relying on inhouse resources.

Most senior managers have greater respect for network managers who acknowledge their limitations and know when it is in the company's best interest to hire outside help, Springer said. ◼

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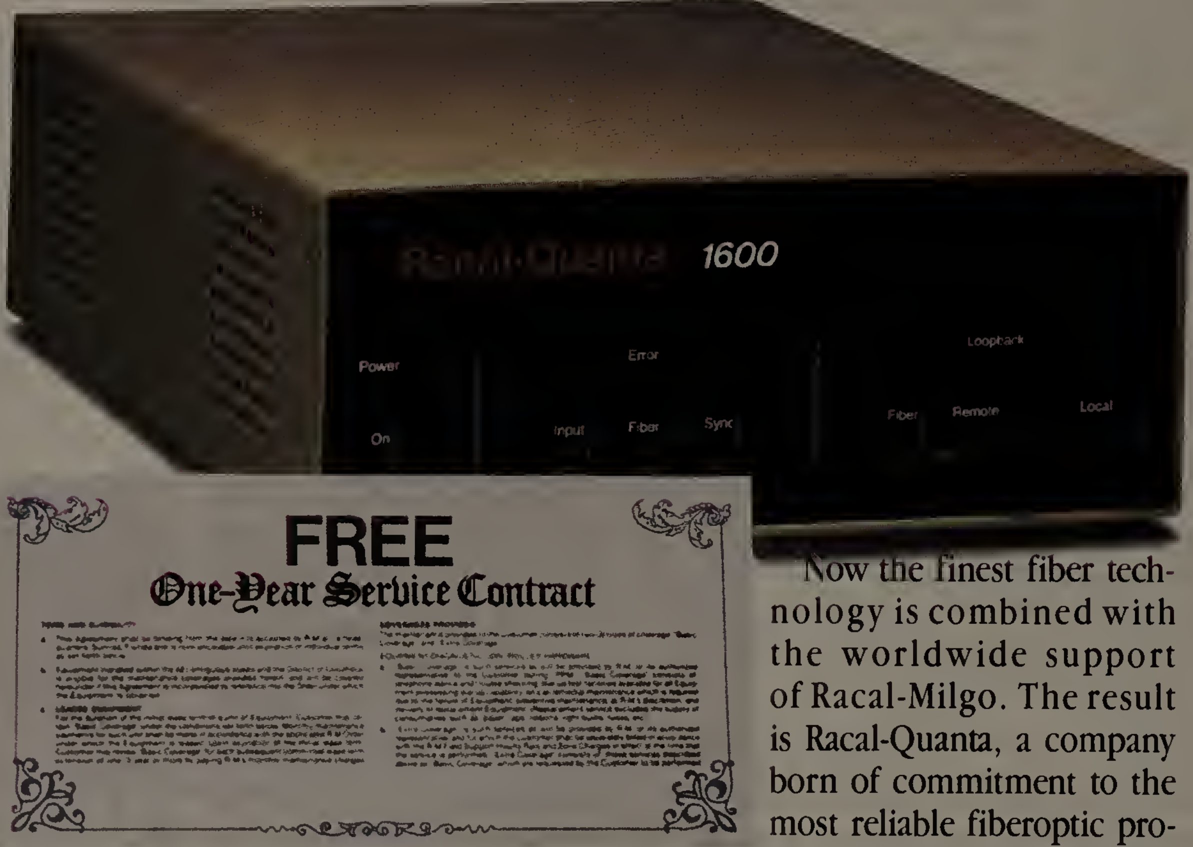

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PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

Worth Noting

Next week: A *Network World* Datacom Buyer's Guide will take an in-depth look at the frailties, features and finer points of front-end processors.

First Look

Retix unveils OSI software for Unix nets

Retix recently introduced a line of software products that provide Open Systems Interconnection-based applications for networked processors running Unix System V Release 3.

The **OSIX** software family includes X.400 electronic messaging, File Transfer, Access and Management (FTAM) and transport products for both local- and wide-area nets. X.500 Distributed Directory Service and Virtual Terminal (VT) support will soon be added to the OSIX line.

OSIX applications are available for end users, systems integrators and value-added resellers in an executable, or binary, version that works with Interactive Systems Corp.'s 386/ix version of Unix. In addition, the software is available as source code to OEMs for products that support other versions of Unix System V Release 3.

OSIX has been certified to work with any workstation that supports Western Digital Corp.'s WD8003E local network card, Retix said.

In addition to Retix, Lachman Associates will sell OSIX in the U.S. Lachman Associates recently announced plans to merge with Interactive Systems.

OSIX is available now, and pricing for OSIX transport products starts at $295 in binary form. Pricing for OSI application software starts at $395.

X.500 and VT products will be available in the fourth quarter.

Retix, 2644 30th St., Santa Monica, Calif. 90405, or call (213) 399-2200.

Mux gives digital pipe more voice

By Tom Smith
New Products Editor

SAN DIEGO — Pacific Communication Sciences, Inc. (PCSI) is scheduled to announce today a multiplexer that uses a proprietary algorithm to squeeze a maximum of four voice channels and one data channel into a 38.4K, 56K or 64K bit/sec digital pipe.

The Clarity Series (CS) 4100 Voice Multiplexer encodes voice at rates between 9K and 16K bit/sec using the company's Adaptive Transform Coding (ATC), which provides "toll-quality" sound, PCSI claimed.

The data channel can operate at speeds ranging from 4.8K up to the maximum speed of the transmission facility used.

The introduction of the CS 4100 comes on the heels of AT&T's announcement of its Accunet Spectrum of Digital Services. These fractional T-1 services will enable users to purchase bandwidth on carrier-supported T-1 lines in 64K bit/sec increments at a lower cost than comparable Dataphone Digital Services ("AT&T fractional T-1 services hit market," *NW*, May 1).

New technique

According to Mike Lubin, executive vice-president of PCSI, ATC allocates bits to sound characteristics that are most prominent at the moment, unlike other techniques for encoding voice at less than 32K bit/sec. Other techniques, Lubin said, sometimes have difficulty maintaining intelligibility as well as the integrity of foreign languages and female speakers. "ATC is more faithful to a broader variety of speakers and languages," he said.

The Clarity Series 4100 Voice Multiplexer encodes voice at rates between 9K and 16K bit/sec using Adaptive Transform Coding.

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In a demonstration of the CS 4100 performed for *Network World*, there was a slightly detectable loss of voice quality.

Compression rates and configuration of the unit are variable, according to David Lyon, president of PCSI. Operators can program the device to provide the needed bandwidth for data transmission and then divide the remaining capacity between voice channels. The unit also allocates a small portion — several hundred bits — for built-in network management capabilities.

Configurations can be changed dynamically or at preset intervals to specify fewer voice channels in favor of a higher data rate. Typical configurations would be four voice channels with a 9.6K bit/sec data rate or three voice channels with a 19.2K bit/sec data rate.

ATC transparently supports modulated analog modem signals at speeds up to 2,400 bit/sec from devices such as dial-up modems.

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The unit's net management capabilities allow the data channel rate to be increased to the clear channel link rate to support a file transfer, then configured back to a typical operating speed. The data channel rate may also be set to specific time-of-day and day-of-week configurations.

Unlike previous approaches to voice compression, ATC transparently supports modulated analog modem signals at speeds up to 2,400 bit/sec from devices such as dial-up modems and facsimile machines.

The CS 4100 is also equipped with integral digital echo cancellation and error protection, which allow the device to maintain high voice quality even in high bit-error-rate environments, such as certain international and satellite links.

Voice channel interfaces supported by the device include a number of industry standards, making it simple to connect the CS 4100 to existing line cards in private branch exchanges. The data channel has an RS-232 interface.

The CS 4100 comes in two- and four-wire models. The two-wire version supports foreign exchange subscriber loop-start or ground-start, foreign exchange office or automatic ring-down. The four-wire version supports E&M Types I to IV. Both models cost approximately $8,000 and will be available immediately.

PCSI can be reached by writing to 10075 Barnes Canyon Road, San Diego, Calif. 92121, or by calling (619) 535-9500.

IBM PC-based testing gear debuts in U.S.

The new Spider Systems tools support network alarm detection and greater protocol analysis.

By Jim Brown
Senior Editor

BURLINGTON, Mass. — Spider Systems, Inc. last week introduced IBM Personal Computer-based tools to monitor and analyze Ethernet local networks.

Spider Systems, the U.S. subsidiary of Edinburgh, Scotland-based Spider Systems, Ltd., said the SpiderMonitor 220 and SpiderAnalyzer 320 are enhanced versions of products previously sold only in Europe. Unlike the existing European versions, the U.S. versions support network alarm detection and can analyze a greater number of protocols.

Both products include a monitor board, an Ethernet interface and software for IBM Personal Computer XTs and compatibles. The monitor board collects network traffic statistics and alarms in real time. The devices can be used with Version 1.0 or 2.0 of Ethernet and IEEE 802.3-based networks.

SpiderMonitor 220 enables users to detect when user-defined performance thresholds, such as those for network traffic load and error rates, have been exceeded. Other alarms can be generated when a new node has been added to the network, making it possible to detect unauthorized network connections or when a node fails.

Alarms can be automatically sent to a disk or printer attached to the personal computer, and they can appear on the personal computer screen.

The SpiderMonitor 220 helps managers create reports based on Ethernet network traffic statistics collected in real time. It tracks network usage patterns, error rates and network collisions. In addition, the SpiderMonitor 220 detects short circuits and can help determine if adding more devices to the network will hamper net performance.

The monitor board includes an on-board microprocessor that off-loads monitoring tasks from the CPU. This enables users to continue running applications such as spreadsheets while Ethernet statistics are collected in the

(continued on page 45)

A Series mainframe users win access to TCP/IP nets

By Jim Brown
Senior Editor

BLUE BELL, Pa. — Unisys Corp. recently announced software that links its A Series mainframes to Ethernet or X.25 nets running the Transmission Control Protocol/Internet Protocol.

The software enables users of A Series mainframes from the former Burroughs Corp. — which merged with Sperry Corp. to create Unisys — to communicate with other vendors' systems that support TCP/IP. Unisys said existing A Series applications require little or no modification to be linked to TCP/IP-based nets.

The announcement complements TCP/IP support on the company's Sperry 1100 and 2200 mainframes as well as Sperry's and Burroughs' existing range of microcomputers and Unix-based systems.

The new software is integrated with Unisys' Burroughs Network Architecture (BNA).

The product consists of two modules, TCP/IP Interprocess Communications (TIC) and TCP/IP Application Services (TAS). TIC software is used to link A Series mainframes to TCP/IP networks. Used alone, TIC can establish an application-to-application link between an A Series machine and a similar application on another system, a Unisys spokeswoman said.

With TIC, developers specify whether the A Series application will use TCP/IP or BNA protocols when establising a connection with similar programs.

TAS software enables A Series developers to build such TCP/IP protocols as the File Transfer Protocol, the Simple Mail Transfer Protocol or Telnet virtual terminal protocol into existing A Series applications.

Purchased together, the TIC and TAS software modules range in price from $15,600 for the low-end A1 A Series mainframe to $53,000 for the top-of-the-line A17 A Series mainframe.

Unisys can be reached by writing to P.O. Box 500, Blue Bell, Pa. 19424, or by calling (215) 542-4011.

OSI

BY ANDREW DE MARI

Not just an ideological vision; it's here to stay

In a recent *Network World* opinion column ("TCP/IP popularity may prevent OSI progress," *NW,* Jan. 23), John McQuillan of McQuillan Consulting argued that the popularity of the Transmission Control Protocol/Internet Protocol may inhibit the progress of Open Systems Interconnection.

I disagree with this and other points made in the article. Identifying OSI with the Transport Protocol Class 4 (TP4) — only one of the many protocols within the OSI seven-layer reference model — is inappropriate. The real and unequaled power of the OSI specifications lies instead in the broad suite of application protocols, such as CCITT X.400 electronic messaging; File Transfer, Access and Management (FTAM); virtual terminal service; network management; distributed directory service; and transaction processing.

There is no equivalent to these feature-rich applications in the TCP/IP world. TCP/IP's Simple Mail Transfer Protocol does not compare to X.400 in terms of reliability and recovery, overall features (such as notification of delivery and acceptance), data handling capability (such as facsimile and voice) and flexible addressing schemes.

Similarly, the TCP-based File Transfer Protocol transfers only binary or text files, while OSI FTAM also handles access and management of several types of structured files. Likewise, TCP Telnet provides only a simple teletype service, while OSI Virtual Terminal Service features multiple character sets, fonts and colors. The OSI protocol also supports asynchronous and page-oriented terminals as well as multiple display windows.

OSI applications operate over presentation- and session-layer protocols, which in turn interface to lower layer protocol stacks such as TP4. OSI's TP4 is a significant improvement over TCP. It solves the problems and limitations of TCP, such as lack of congestion avoidance, small address space and "silly window syndrome," a problem arising from packets being received out of sequence due to rerouting, resulting in the wrong window being adopted and degradation of performance.

As for availability of OSI products, TP4 software has been marketed since 1985. Since then, tens of thousands of OSI nodes have been installed worldwide. Dozens of different OSI protocols covering all seven layers exist today. They are available in various incarnations, from portable source versions to fully ported binary versions for prevailing hardware/software platforms (Unix and DOS, among others). Most importantly, X.400-based wide-area net services, such as Telemail 400 and AT&T Mail 400 in the U.S., Atlas 400 in France and BT Gold in the U.K., are currently available, together with turnkey software for end-user premises.

The trend toward universal adoption of X.400 is certainly unaffected by the popularity of TCP/IP, which has never caught on as a corporate electronic mail solution. Similarly, in the U.S. and the U.K., the Government OSI Profile is being adopted and implemented at an increasingly fast pace in requests for proposal, while systems integrators and software houses are responding with OSI products and planning added value.

Undoubtedly, existing TCP/IP installations will not disappear overnight. On the contrary, they will remain in operation for several years. OSI implementations will coexist with TCP/IP installations through the use of internetworking solutions such as dual-protocol routers, application-layer gateways and OSI applications running over TCP/IP networks.

OSI is here to stay. TCP/IP has served well as an interim solution by providing much-needed minimum connectivity solutions. But the prognosis is clear: At the end of the century, only islands of proprietary installations will remain, surrounded by oceans of OSI.

De Mari is the founder, chairman and chief executive officer of Santa Monica, Calif.-based Retix, a leading supplier of OSI products.

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EDITORIAL

Lack of multivendor integration dims ISDN allure

The technological display of Integrated Services Digital Network at the recent International Communications Association (ICA) show in Dallas was disturbing.

Sponsored by the ICA and Southwestern Bell Telephone Co., the showcase managed to display the collective ISDN works of more than 60 vendors — seemingly a surefire way to dispel beliefs that ISDN applications are still vaporware.

By most accounts, the showcase was a resounding success. But perhaps users should temper their unbridled optimism.

Potential ISDN users were treated to demonstrations of budding applications, including two-way videoconferencing, personal computer-to-personal computer file transfer and automatic number identification. Those achievements are indeed encouraging, and vendors' efforts should be applauded.

Unfortunately, the major shortcoming of the ISDN showcase was that only one vendor — Southwestern Bell — linked its ISDN applications over all four of the switches used in the demo.

By contrast, AT&T chose to run its applications over its own 5ESS switch, Northern Telecom, Inc. ran its applications over its DMS-100 switch and other vendors followed suit.

These vendors failed to prove that ISDN is truly a set of services integrated across different vendor domains. Some vendors will counter that they indeed demonstrated integrated applications — but those applications were integrated strictly within each vendor's proprietary environment.

That, in itself, isn't in the spirit of ISDN.

The allure of ISDN technology is that it will permit a user to pick up a line connected to an AT&T switch, for instance, and talk to another user over a Primary Rate Interface or Basic Rate Interface line connected to a different switch. But collectively, the vendors at the ICA demo failed to demonstrate that level of integration, leaving some lingering doubt whether such integrated services are actually deliverable.

> The vendors failed to prove that ISDN is truly a set of services integrated across different vendor domains.

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"I think vendors forced many of the applications just to show some practical use of ISDN," says Gary Henkel, director of telecommunications at Time Customer Service, Inc.

So how can network managers commit to ISDN technology based on what they witnessed at the ICA demonstration?

The showcase seems to have answered some questions, but it also raised perhaps the single greatest concern: If vendors claim they can deliver *Integrated* Services Digital Networks, why did only one vendor demonstrate a suitable level of integration?

Vendors could have, and should have, built a stronger case for their ISDN services. That isn't to say the demonstration failed. Many users undoubtedly left the showcase impressed with the products and services on display. And the technicians and ICA members who sweated the details to make it all work certainly deserve kudos.

But the lack of vendor-to-vendor integration has cast a pall over ISDN, clouding the benefits the technology could deliver. Before users sign any service contract, they should demand that vendors demonstrate how products and services can be integrated across different vendor domains.

Vendors, for their part, should get together in the same spirit of cooperation that characterized the ICA demonstration and this time integrate their applications across vendor boundaries.

Otherwise, users will continue to identify ISDN as an acronym for "I still don't know."

CIRCUIT ASSURANCE

BY ANDRES LLANA JR.

Striving for the truth in circuit alarm reporting

We have truth in lending and truth in labeling laws, so why not truth in circuit alarm reporting laws? In the early 1980s, there began a marked increase in the leasing of dedicated point-to-point service. Maybe that's when everyone's troubles began.

Line problems seemed to develop overnight. Large sophisticated users such as AMP, Inc., General Motors Corp. and Union Carbide Corp. had the staff to deal with these problems.

However, small users in the middle market had no one to help them. Their only alternative was to call their Bell operating company's 800 trouble reporting service, only to get the standard "no trouble found" report. When they experienced the same line problem again the next day, these small users had no place to turn for assistance.

Since divestiture, users have had to take on more responsibility for circuit assurance, including end-to-end circuit testing. Early attempts at circuit assurance at large user installations began with the application of bit error rate testers. Using these devices, coupled with breakout displays, was the most popular method for testing circuits.

Ardent pursuit of circuit outages by these large network users produced better service and big rebates for out-of-service circuits. As they began to deploy data communications, most organizations placed more emphasis on maintaining their data circuits and not on their voice communications circuits.

This may be due to the fact that voice communications is more tolerant than data communications. Our ears will tolerate much more in the way of line errors than will our computers.

For this reason, voice circuit outages — particularly those happening to members of a large trunk group — can go unnoticed for weeks and often are not discovered until a total network collapse occurs. It is obvious that, in such a scenario, many users could be paying for circuits that are not in service.

There are no bit error rate testers on the voice side of most firms' telecommunications organizations. Telecommunications managers frequently have to resort to other measures to resolve network problems.

For example, some of the digital private branch exchanges on the market contain internal maintenance programs that can test the availability of circuits. However, this method of circuit assurance depends on the availability of trained PBX maintenance personnel to run the diagnostic programs that perform the circuit testing sequences.

> Since divestiture, carriers have had a sort of "I didn't hear nothing" attitude toward trouble reporting.
>
> ▲▲▲

Limited information is available on PBX circuit outages unless arrangements can be made to run these specific internal PBX line monitoring programs on a continuous basis. Obviously, this is not a solution.

Since divestiture, carriers have taken different stances on circuit assurance — a sort of "I didn't hear nothing" attitude toward trouble reporting. For example, it has been AT&T's policy not to give users access to test centers for assistance in tracing line problems; instead, AT&T's response is, "Call the 800 number for trouble reporting services."

Many users view this service as providing marginal support at best, particularly since these centers are manned by nontechnical personnel assigned to fill in information on a CRT screen.

As competitive market pressures became more intense, United Telecommunications, Inc. — in a bold move before joining with GTE Corp. to form US Sprint Communications Co. — gave out the telephone number of the test center that supported the switching center where users' facilities interfaced with the United Telecom network. The name of the appropriate manager was also supplied in some circumstances.

Other carriers such as ITT Corp. tolerated similar access arrangements to their test centers by private-circuit subscribers. This provided users with a measure of assurance since there was someone to call and circuit problems could be tracked down.

When United Telecom became US Sprint, the policy of giving out the test center information was replaced with an 800-number trouble reporting service, and the personal touch to circuit assurance became lost in the impenetrable bureaucracy of US Sprint.

Can carriers do more?

MCI Communications Corp. recently announced its MCI View service, which provides real-time or near-real-time access to circuit alarms and facility alarms that can affect service on users' voice and data networks.

Currently, the MCI View service provides alarm and performance information on the dedicated portion of MCI's Terrestrial Digital Service 1.5 and other T-1 extended superframe format-monitored circuits that are used by customers.

This includes service outages and threshold alarms such as frame slips, out-of-frame conditions, and red and yellow alarm indication states, as well as quantitative performance data extracted from the T-1s. Any MCI user that has a dedicated voice access line into an MCI switching facility can receive information on PBX switch outages, PBX switch alarms and customer premises equipment trouble indicators, as well as traffic performance alarms.

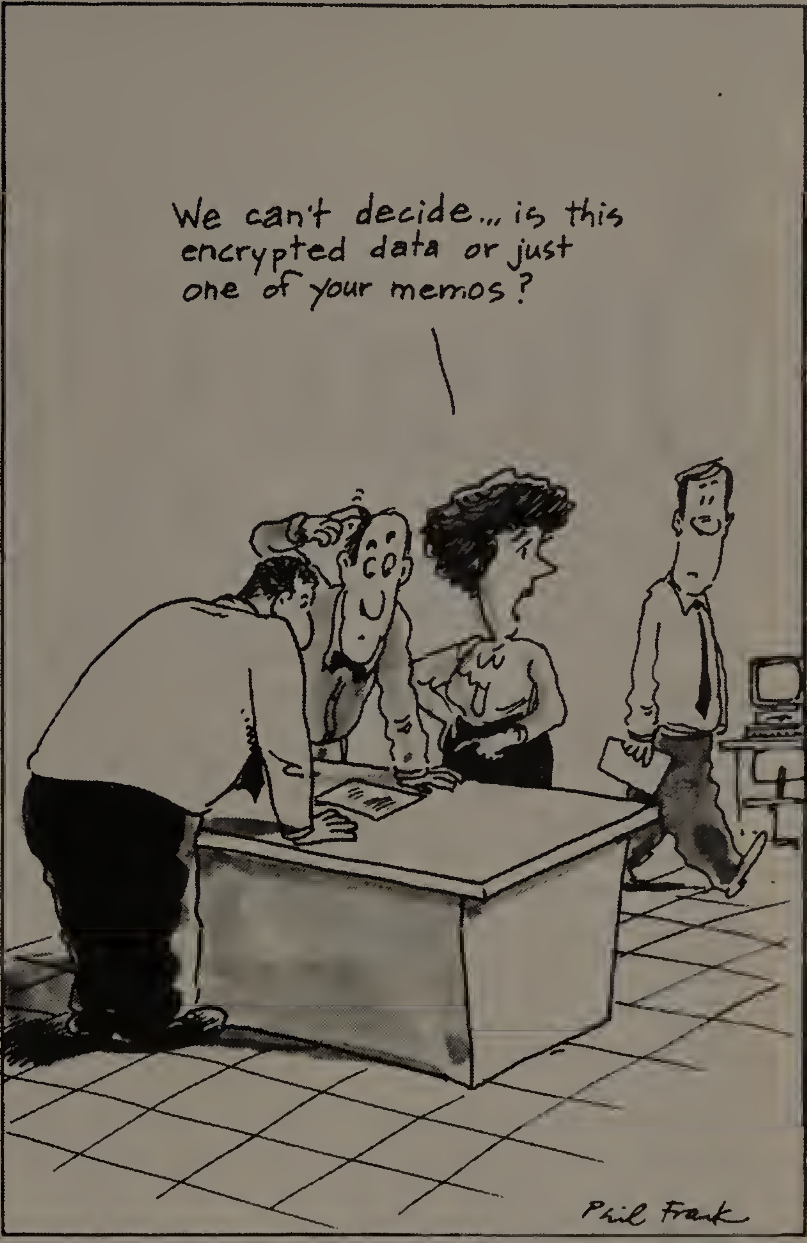
This is a step in the right direction toward truth in circuit alarm reporting. But is it enough? Well, reportedly MCI and US Sprint will soon offer additional monitoring services that will let users monitor all of their network access via an Intel Corp. 80386-based personal computer and conduct both circuit assurance monitoring and trouble ticket management.

It appears now that market pressure may be working to the benefit of network users. However, telecommunications managers must continue to do their part and monitor their circuits, taking nothing for granted. If they do, better quality service will surely follow. ◘

Llana is director of consulting services for the Vermont Studies Group, Inc., a telecommunications consulting firm in West Dover, Vt.

TELETOONS

BY FRANK AND TROISE


We can't decide... is this encrypted data or just one of your memos?
Phil Frank

LETTERS

A case of liability

Your March 27 editorial ("Illinois Bell should pay users for losses from Hinsdale fire") was a superficial treatment of the issue of telephone company liability and a disservice to Bell operating companies with superb records of protecting their central offices from fire over the years.

Utility regulation operates on the basis that quality service must be made available at reasonable rates to everyone. If telephone companies such as Illinois Bell Telephone Co. were exposed to unlimited claims for business losses suffered by users because of catastrophic events, those companies would be forced to increase telephone rates to an unacceptable level to cover the added risk. This is why telephone tariffs in Illinois limit liability.

Liability limitations are not restricted to the utility industry. They are, in fact, a common business practice. Insur-

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Network World *welcomes letters from its readers.*

Letters should be typed, double-spaced and sent to Editor, Network World, *375 Cochituate Road, Box 9171, Framingham, Mass. 01701.*

Letters may be edited for space and clarity.

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INDUSTRY
FOCUS

UTILITIES/ENERGY COMPANIES

Heavy static

CONTINUED FROM PAGE 1

innovative concepts were implemented that, while expensive at the time, helped keep increases in energy costs significantly lower than the pace of inflation.

The centralized monitoring and control of energy generation and distribution via remote communications links was one of the first major advancements that allowed utilities to centralize operational control, thereby reducing expenses and increasing operating efficiencies.

The immediate savings associated with remote centralized control created a desire to move as many applications to centralized control as possible. At first, telephone companies provided the medium for all these information transactions. Later, utilities constructed private communications networks using microwave technology.

One benefit of being in the engineering department of an energy utility was that senior management comprised engineers who shared the same concerns as the innovators they employed. These technical managers were capable of seeing the big picture and often looked for long-term projects that would ensure the survival and continued profitability of the company. Raising issues of reliability and control, communications engineers convinced management to spend the money these projects required.

Pioneering systems

In addition to private microwave networks for voice and data traffic, utilities pioneered the use of power line carrier technology to control the operation of substation switching equipment. This technology was inexpensive and effective, using the power lines as transmission media for sending control signals to remote equipment. The lines transmitted the signals via unlicensed carrier frequencies in the radio spectrum.

Utilities also used mobile radio systems to coordinate the dispatch of work crews within generation plants and along the distribution paths. But unlike power line carrier technology, these radio networks (usually VHF and UHF bands) fell under the protection and regulation of the Federal Communications Commission.

Network evolution

Communications networks that utilities constructed for operational control quickly became vehicles for bypassing the telephone companies. These nets were mostly used for voice applications.

Communications engineering sections began to hire telephone engineers (electrical engineers with communications backgrounds) to build and implement cost-effective administrative networks.

At the same time, data processing departments began to develop on-line computer applications requiring remote communications for administrative purposes. These networks permitted centralized computer processing of customer bills and purchase orders, as well as other accounting and administrative functions.

Many utilities now face a problem — the growth of applications and resultant saturation of existing frequencies. Attempts to increase the size of existing networks often fail due to frequency saturation, which forces the utilities to look into implementing systems in less congested frequency bands.

Power line carrier technology has become unreliable because of the increased implementation of radio-location systems, such as Loran-C, used by the Federal Aviation Administration. Interfer-

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Walczak is a manager in the Pittsburgh-based Network Consulting Practice of Ernst & Whinney.

Communications managers
in the utility business
face a battery of problems —
technological, organizational
and regulatory.

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ence problems, which are the utility's responsibility to correct, often require removing the power line carrier from use. Eventually, alternate forms of control communications will replace power line carrier technology due to the saturation of licensed applications in the frequencies it currently uses.

As the utilities' DP departments grew, there was no corresponding growth in the number of data communications professionals in telecommunications departments. Therefore, DP departments hired data communications specialists to address computer users' needs. These data communications experts began to plan communications for DP applications that placed increased demands on the existing facilities — in effect, duplicating the job function of the communications department.

Today's environment

The growth of DP departments has created a large and powerful new group: telecommunications users who have little in common with their telecommunications engineering counterparts. This group almost never includes representatives from the communications department in the planning stages of computing facilities construction and seems to work in much shorter time frames than construction engineers.

The growth of DP departments has created a powerful new group: telecom users who have little in common with their telecom engineering counterparts.

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To make matters worse, telecommunications users never leave circuits in place and always seem to blame the communications department when their computers go down. Communications professionals often believe that DP people view communications as little more than an internal phone company — downplaying the importance of the services the department provides.

Unfortunately, this perception has resulted in considerable duplication of effort. Has anyone ever been able to justify two help desks (DP and communications) for users to call when their terminals go down? What are the costs and benefits of having two separate network monitoring and control centers that have no common procedures for clearing problems? Security of voice communications is the function of communications; data security is the function of DP; and just to make things interesting, security of physical property via video surveillance is the responsibility of general services.

Organizational disparities

Organizationally, the communications department has no incentive to provide the same level of service to DP that it has traditionally provided to engineering groups. Conversely, DP often views coordinating with the communications section as a necessary evil for acquiring circuits. The lack of cooperation between communications and DP is tolerated because the two divisions usually report to different managers, who naturally tend to agree with the claims of their own staff. This no-win situation has created pressure on both departments.

In addition, utilities are becoming more like other businesses: maximizing profits and lowering costs in the near term are rewarded, while long-term projects receive lower priority. The utility regulatory agencies and investors have become more demanding. Investors want more for their money, and regulatory agencies are likely to question long-term capital projects. Utilities are being forced to reexamine ongoing operations in short-term time frames.

Reorganization options

As a result, efficiency studies and reorganizational efforts are gaining momentum within the industry. In a reorganization, the most important factors to consider should be the strategic direction of the utility and the strategic function of each department.

The interaction of the departments should be evaluated with the overall goals of the utility in mind, not just the goals and objectives of the individual departments. Too often in industry, studies focus on the operation of individual departments instead of the functionality of all the departments as they relate to the goals of the organization. Utilities that strive to operate efficiently must begin to look within for logical ways to streamline.

What choices do DP and communications departments have? Three options stand out as the most likely:

- **No structural reorganization at the departmental or division level.** Instead, departmental coordination is enforced through written policies and procedures. This tends to happen in utilities with large communications departments.
- **Placing the communications-function within the organizational boundaries of the DP department.** Small and midsize utilities may lean toward this alternative due to an already larger and more powerful DP department.
- **The creation of the position of chief information officer.** This person would have the organizational power and responsibility to coordinate all forms of information flow, including but not limited to voice, data, video and facsimile. Approximately 5% of the Fortune 1,000 use this approach.

All three alternatives can potentially improve utility operations, either through improved lines of communications or structural changes that ensure cooperation.

Playing catch-up

Much has been written about the tremendous opportunities for using established utility rights-of-way to create communications networks for corporate and external use. Industry experts expected Docket No. 83-426, the FCC ruling that allows private communications networks to resell excess capacity, to open the floodgates for utilities with established networks and strategically located rights-of-way.

But few utilities have taken advantage of this opportunity because, although their existing networks use analog technology, they still meet the internal needs of the company. There is no operational need to install the digital technology that is necessary to attract potential customers.

Most established microwave networks have capacity ranging from 24 to 600 voice-grade channels and still use analog frequency-division multiplexing transmission. Utilities looking to upgrade facilities have been converting to digital transmission, but today's utility management demands to see paybacks in two years or less. This short time span stifles communications engineers' efforts to bring their networks up to the latest technology standards.

In a reorganization, the most important factors to consider should be the strategic direction of the utility and the strategic function of each department.

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The difficulty of getting funds to upgrade systems increases exponentially when fiber-optic spans are involved. Communications managers have no trouble arguing the technological benefits of fiber-optic transmission. Reliability and security are still important considerations to upper management, and any technology not susceptible to electromagnetic interference will certainly catch the interest of power engineers.

The last obstacle facing utilities considering resale is the regulation of private networks capable of reselling excess capacity.

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However, today's business criteria require cost-benefit analyses the likes of which most communications engineers have never seen. How does a communications engineer cost-justify more than 2,000-channel capacities when the existing 600-channel microwave system is only half utilized? Resale of excess capacity can be an economic justification, but resale introduces many issues that must be dealt with first.

The problems with resale

Some utilities are considering moving into the business of providing communications. This has forced them to address technical, legal and administrative issues carefully and has often resulted in the shelving of well-laid plans. Issues that are currently preventing many utilities from entering the resale market include:

- **Identifying the markets.** Utilities are finding that only large customers are worth pursuing.
- **Delivering the service and 24-hour-a-day support users require.** Many potential customers shy away from utility offerings because they don't want to give up the levels of support telephone companies provide.
- **Providing service to the potential customer's locations.** Utility networks are built to meet the geographic needs of the utility, not the resale customer. When new facilities have to be constructed, it's no longer an issue of excess capacity. Also, last-mile service from the utility network to the customer's location is provided by the local telephone company, making the circuit offerings less cost-effective.
- **Maintaining the security of the utility and customer equipment, including access to equipment.** Not many utility operations departments are willing to allow nonutility personnel into the room that houses its control and communications equipment. This makes it very difficult for utility communications sections to support user requirements for equipment within utility buildings.
- **Addressing organizational changes that may become necessary to compete in the services market.** The telecommunications playing field is littered with the remains of companies that could not cope with the demanding pace and ever-changing requirements of users.
- **Coping with legal challenges and regulation.** Providers may lose marketing advantages when dealing with the FCC and, in the case of utilities, the state public utility commissions (PUC). A utility may decide that the communications-related revenue is not worth the legal battles brought on by other providers and PUCs that worry about ratepayers subsidizing operations.

Regulatory roadblocks

The last obstacle facing utilities considering resale is the regulation of private networks capable of reselling excess capacity. When the FCC decided to allow private network owners and entrepreneurs to sell capacity to others, many communications departments envisioned microwave networks and new fiber networks that would become self-supporting, with resale revenues subsidizing construction. However, as one pioneer discovered, laws are made to be challenged and the costs of repeated court filings and appearances can easily destroy optimistic financial projections.

Norlight, a partnership of electric utilities in Wisconsin and Minnesota, was one of the first to embrace the concept of resale. These private network operators formed a combined network with a geographic span between Chicago and Minneapolis that provides a hybrid of microwave and fiber-optic transmission technologies.

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INDUSTRY FOCUS

UTILITIES/ENERGY COMPANIES

On the frontier

By JOSH BRACKETT

From the dawn of the telecommunications age, oil companies have been leaders, pioneering the industrial use of the telephone and telegraph. Today, the oil and gas business is a multinational game of large volumes and long distances in which telecommunications is strategic.

Since all of the easily accessible oil is long gone, the industry's task is to roam the earth looking for oil in remote places. When oil is found, it must be pumped out of the ground and moved hundreds or thousands of miles to refineries and then thousands more miles to consumer outlets.

Tom Mulgrew, network design manager at Chevron Information Technology Co., the San Ramon, Calif.-based subsidiary that supplies worldwide communications for Chevron U.S.A., Inc., says that his users want all the telecommunications they can get, and "nobody bats an eye about the cost." Oil and gas companies are power users of telecommunications. They have the money, and they have special problems that require them to spend it.

Exploration and drilling

In the seismological exploration phase of the oil process, when geologists go out looking for places where they think there might be oil under the ground, the preferred medium of commu-

(continued on page 32)

Brackett is a free-lance writer who lives in Rockport, Mass., and specializes in computers and communications.

The remoteness of oil and gas deposits creates special challenges for communications managers.

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nications is high-frequency radio: small manpacks (a radio worn like a backpack) and base stations to coordinate the movement of people and equipment. VHF radio is sometimes used if longer distances require it.

Once the geologists pick an area, the only way to find out for sure if there is oil under the ground is to drill holes. But if geologists use the data they acquire from one hole to guess more intelligently where to drill the next one, they can save themselves a lot of trouble and expense.

Reservoir analysis, the science of figuring out where to drill next, is extremely data-intensive. It involves making two- and three-dimensional computer models of portions of the subsurface earth using data from well logs, which are the records of everything brought up by the drills. Data communications is required because the problem is much too large for an on-site computer. Chevron uses a Cray Research, Inc. computer located at its data processing center in Houston.

Once oil has been discovered, the usual practice is to set up a stationary drilling platform with point-to-point or very small aperture terminal microwave communications for voice, data and facsimile transmissions to a field drilling office. The field office is, in turn, connected to corporate headquarters either by direct lines or through the local telephone system.

A perfect fit

VSAT satellite communications and the oil and gas industry seem to be made for each other. In fact, the first viable use of VSAT technology was a link between an oil rig and company headquarters, according to Loyce Hurley, a consultant with the Energy Telecommunications and Electrical Association (ENTELEC) in Dallas.

A VSAT dish is small enough to fit in the back of a truck. It can be set up or taken down in 15 minutes, and it provides synchronous and asynchronous voice, fax and data circuits, up to and including T-1. No licenses are required. There is no need to depend on the local phone company, if there is one. There are no traffic jams. And, compared with the alternatives, VSAT is inexpensive.

An added benefit is that politically insecure Third World governments, which may be reluctant to permit the importation of radios that could fall into the opposition's hands, are more comfortable with VSATs.

VSATs are well adapted to drilling in dense jungles, where it's difficult to get a microwave dish up above the tops of the trees. It's also useful for temporary rigs that may drill in one place for only a week and then get picked up by helicopter and flown somewhere else.

Speed is of the essence

William Gary, a consultant with the Houston telecommunications engineering firm of Lockard & White, points out that being able to get in and out fast is important. "Running a drilling rig out in some of these places costs many thousands of dollars per day, so [companies] try to use them as efficiently as they can.

"After flying in a drilling rig, moving a VSAT station onto the site with a helicopter is relatively simple," Gary continues. VSATs can provide a direct line to a company's U.S. headquarters for voice and data. High-frequency radio is often used as a backup for the VSAT system, and VHF radio is usually used for ground-to-air links.

VSATs are even used on floating offshore drilling rigs. They are mounted on gimbals to isolate the antenna from the rolling and pitching motion of the platform. Small electric motors keep the dish pointed at the satellite. If the signal is lost, the antenna automatically goes into an expanding spiral search until it relocates the satellite.

Pipeline

Getting oil to the refinery requires a pipeline system — direct or to a tanker port such as the now-infamous Valdez, Alaska. Keeping oil flowing through pipelines requires a Supervisory Control and Data Acquisition (SCADA) system. A SCADA system uses telemetry to measure pressures, temperatures and flows all along the line and report them back to a control room. SCADA also operates remote controls for pumps and valves.

According to Chevron's Mulgrew, better SCADA systems installed since the 1970s have undoubtedly improved pipeline and refinery safety as well as efficiency. Safety is important, he points out, when you're handling "things that blow up."

Traditionally, pipelines have been controlled by human dispatchers who watch dials and throw switches, but some pipeline networks are now completely automated, "closed-loop" systems that usually operate without human intervention. A computer-based control system monitors the data, compares it to preset thresholds and sets off alarms when problems occur.

Pacific Gas and Electric Co. of California has just installed a new SCADA system for its 36,000 miles of pipeline. The system includes 210 remote terminal units (RTU) connected to 28 minicomputers at 13 sites by a private X.25 packet-switching network provided by Telenet Communications Corp. Telenet's packet assembler/disassembler interface allows access to X.25 networks from RTUs, which are used in great numbers by energy and utility companies.

The Pacific Gas and Electric network embodies the principle of distributed processing in that there is no central host computer. The minicomputers relay data to one another and back one another up. The system also operates virtually without leased lines. Fourteen multiple-address system point-to-multipoint microwave radio masters located on mountaintops communicate with RTUs in the valleys and deserts below.

While installing the system, John Stuart, Pacific Gas and Electric's project man-

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ager for the network, and his colleagues had to solve a number of technical problems. These included: RTU failures, radio interference, noisy circuits, data bottlenecks, administrative overload and too many people — from technicians to vice-presidents — who wanted access to SCADA information.

Now, however, Pacific Gas and Electric has a system "that operators can rely on, technicians can maintain, engineers can expand and managers can regard as a good investment," Stuart says.

The oil industry's initial large investment in corporate microwave networks, especially in the U.S. and off its shores, was made primarily for SCADA. As a result, the Williams Pipe Line Co. of Tulsa, Okla., is the third largest telecommunications carrier in the U.S.

Once you've bought a SCADA system, it costs little more to add voice and data transmission channels. Microwave is still useful, but fiber optics is beginning to replace it, particularly for permanent large-scale installations.

According to Lockard & White's Gary, fiber optics provides a clean signal and requires no towers or licenses; in addition, Gary notes that the technology offers "tremendous bandwidth for modest cost and no spectrum interference problems." Gary says he has noticed more fiber-optic vendors, and fewer microwave vendors, displaying their wares at oil industry trade conferences in recent years.

VSAT is being used increasingly for SCADA applications in place of expensive leased lines. A typical configuration would be a "double-hop" system, in which data is bounced from RTUs to a geosynchronous satellite to a ground hub dish, back to the satellite and finally down again to the host computer. The system sends out a 30-byte packet of polling data to every RTU and receives an 80-byte response every two minutes or less.

Williams Pipe Line's SCADA system connects 110 RTUs spread over 10 states. Each of them must transmit data back to the host computer in Tulsa every five seconds.

Formerly, they were serviced by six multidrop leased lines with about 20 drops per line. This was not only costly but insufficiently reliable. Each RTU was down an average of 63 hours per year. The situation became even less tolerable after the divestiture of AT&T; Williams Pipe Line then had to deal with 30 or more independent telephone companies.

Furthermore, Williams Pipe Line wanted to automate the RTUs, but doing so would require cleaner lines and faster data throughput than the 1,200 bit/sec capacity those RTUs had. Williams Pipe Line considered the alternatives of Ku-band VSAT, microwave or fiber-optic lines running along the pipelines. Research showed that all three were approximately equal in reliability — they could expect about 12 hours of downtime a year — but VSATs were much less costly.

Refining

In simple terms, refining oil means boiling it and taking advantage of the fact that some of its ingredients, such as gasoline, vaporize at lower temperatures than other ingredients, such as tar.

In practice, a modern refinery is a huge automated process manufacturing plant whose product is potentially lethal. Safety is a paramount consideration. Communications systems within a typical refinery include a computer-based SCADA system to monitor and control the flow of oil in real time, fire shutdown networks, a fire alarm system, plus voice and data communications lines — 5,000 lines is not unusual — and UHF portable radios.

Because of stray electromagnetic energy, refineries are hostile environments for conventional telecommunications. Fiber solves this problem. Chevron's Port Arthur, Texas, refinery has a Sytek, Inc. fiber-optic local network that connects personal computers and Digital Equipment Corp. VAXes through gateways.

According to Mulgrew, it is beyond question that refinery communications and automation have paid for themselves many times over in energy savings and other efficiencies.

Distribution and marketing

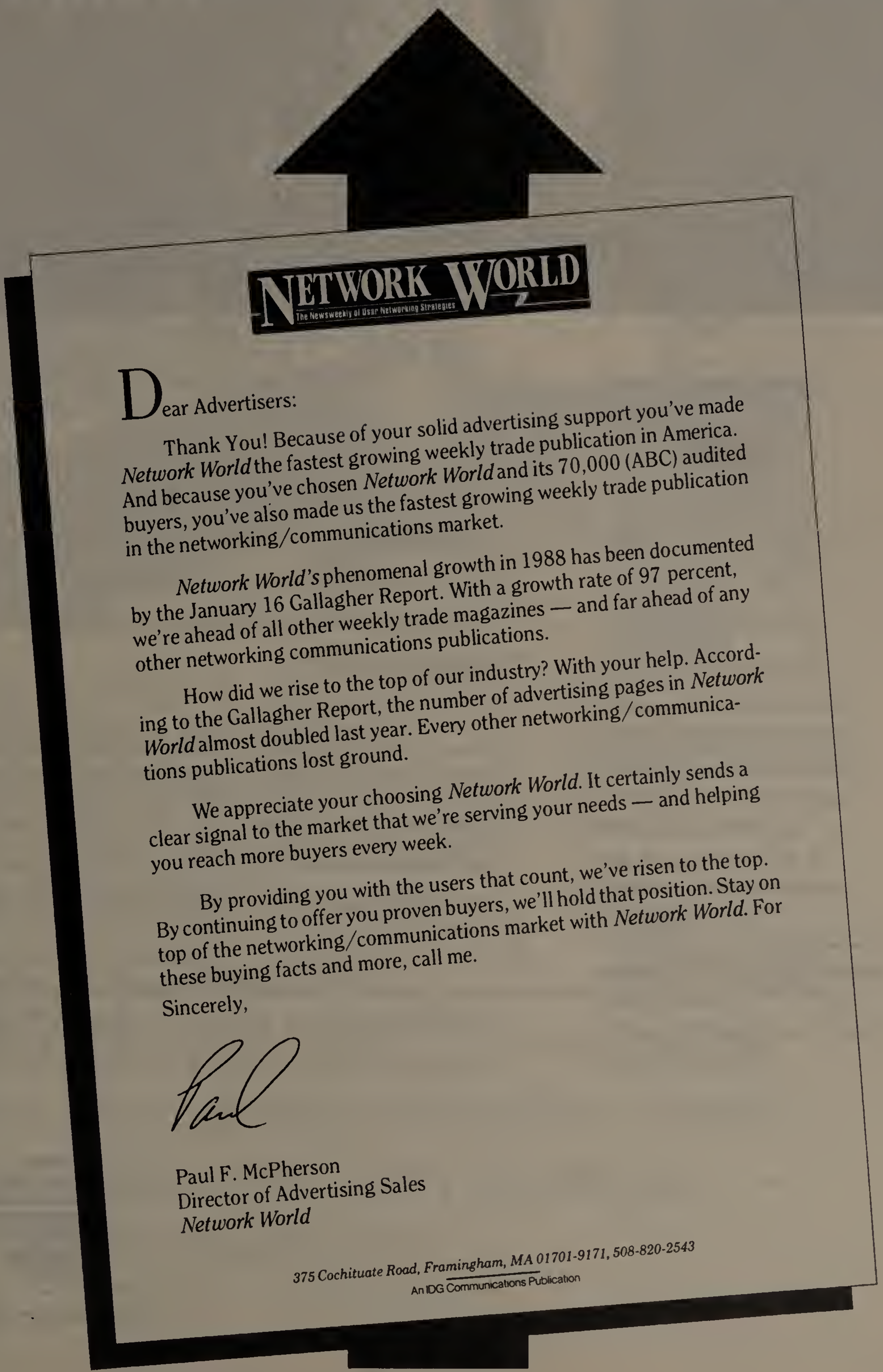
As petroleum products get closer to their final destination, the problems of the oil and gas business become more like those of other industries. Computer-based optimization of delivery paths and inventories means gathering far-flung data as vast quantities of products move toward wholesale and retail markets in tanker ships, railroad cars and tanker trucks. As Mulgrew puts it, you have to have "empty tanks to put things into and full tanks to load from."

Most of the major oil companies now have point-of-sale networks that report sales directly from the gas pump to corporate headquarters for accounting, inventory control and credit-card verification. T-1 and fiber-optic links are being used increasingly for this application.

Not only are oil company corporate managers and marketing people beginning to use videoconferencing, some of the companies themselves are diversifying into radio and television broadcasting.

Marketing and distribution are probably the growth areas for telecommunications in the oil and gas business. As long as oil is inexpensive and capital is expensive, U.S. oil companies will tend to concentrate on refining, distributing and selling imported oil. Efficient reporting of sales information makes it possible to keep inventories down.

Flexibility, however, is an important consideration. Anyone who remembers the 1974 oil crisis knows that in the worldwide oil market, things can change very fast. ENTELEC's Hurley puts it this way: "If oil prices went up $2 a barrel, you'd see networks changing overnight to support exploration again."



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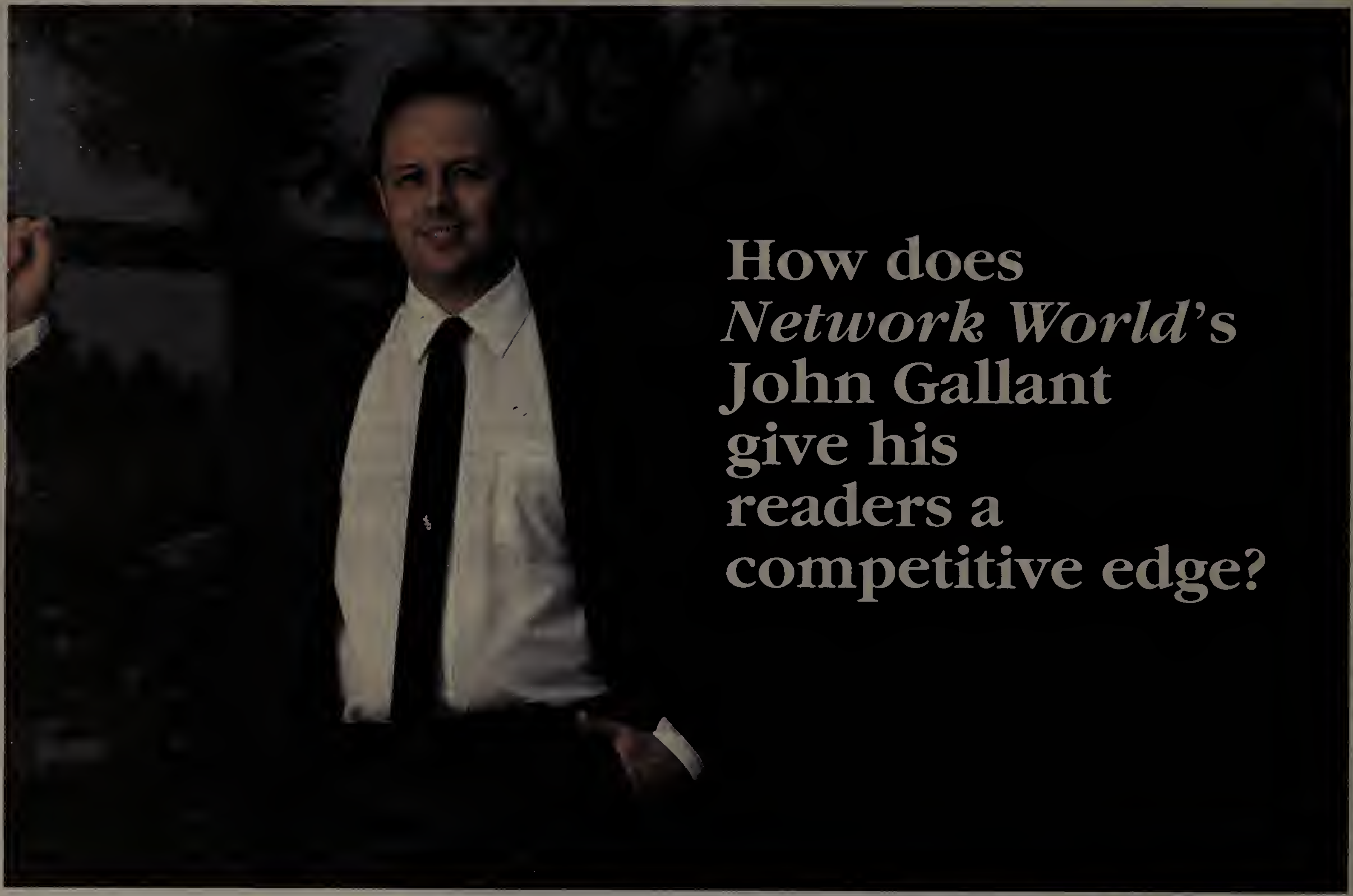

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Answers for the Information Age.

A united front

By JULIA KING

Three years ago, when Burroughs Corp. bought out archrival Sperry Corp., customers of both companies were on edge, to say the least. Despite promises from the newly formed Unisys Corp. that it would continue to support, and even enhance, both companies' product lines, users remained skeptical. How could two totally different and incompatible computer lines, designed to work on proprietary systems, be integrated?

Internally, executives such as Bard Haerland, Unisys' staff vice-president of worldwide telecommunications, were asking the same question. The takeover, which occurred in May 1986, left Haerland at the helm of two totally incompatible, extremely large data networks. Devices linked over the two corporate networks included well over 100,000 dual-vendor terminals scattered throughout 40 countries, about 350 Sperry and Burroughs mainframes and some 250 data communications processors.

All told, the two data networks — composed primarily of 9.6K bit/sec and 56K bit/sec private lines — contained some 4,000 individual circuits, which carried more than seven billion characters per day. Also, the Development Network (DEVNET), a third data network used for engineering applications, was in operation on the Sperry side.

Unisys inherited two independent voice networks as well. Together, these networks served some 40,000 users in 200 domestic locations and generated more than six million minutes of voice traffic per month. The problem was that they were incompatible.

Organizing a team to manage all of these communications resources was imperative. The merger brought together two telecommunications departments and two MIS departments, as well as sundry functional units with scattered communications responsibilities.

Two network control centers — one in Detroit, the other at Unisys headquarters in Blue Bell, Pa., on the outskirts of Philadelphia — had to be meshed. So did their more than 100 employees.

On the plus side, the newly formed Unisys inherited from Sperry a fairly sophisticated T-1 network that carried voice as well as some data. This network later proved invaluable to the corporation as a backbone for tying together the various pieces of its communications puzzle. The question was where to begin.

Critical first steps

“Obviously, our first challenge was getting to a point where we could talk to one another,” Haerland says. With the end of the fiscal year fast approaching, the two former competitors had just two months to close their books as a single computer company, second in size only to IBM. Communication was indeed critical.

The first step was to gather the two companies' 130 or so telecommunications managers, technicians and planners into a single

(continued on page 36)

King is a free-lance writer based in the Philadelphia area.

Merging Burroughs' and Sperry's incompatible computer lines into a unified worldwide network has presented Unisys with many challenges — and headaches.

ILLUSTRATION ©1989 ALAN HOPKINS

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umbrella group. This group included representatives from both companies' telecommunications departments, which had responsibility for both voice and data prior to the buyout.

It also included what Haerland refers to as "scattered autonomous groups," which handled individual departments' data transmission requirements.

On the voice side, Unisys' first priority was to give all users, regardless of their location, common access to a companywide network. This required developing a new dialing plan for all employees. About half of those employees were at former Burroughs sites on a shared Enhanced Private Switched Communications Service (EPSCS) system furnished by AT&T.

The other employees were using an AT&T Electronic Tandem Network (ETN) carried on the Sperry T-1 backbone. Just before the takeover, Sperry equipped 10 major locations with AT&T System 85 private branch exchanges, which act as network nodes for the ETN riding the T-1 backbone.

The task of implementing a single dialing plan was complicated by the fact that the newly created Unisys was continually moving employees. In all, some 230 locations were either closed, moved or expanded in the months following the merger. Haerland estimates that, over the past 2½ years, his department has handled communications on more than 400 separate real estate projects.

On the ETN side of the house, creating transparent access was fairly straightforward. It required reprogramming switches so that calls made to a former Burroughs extension, for example, could be routed off-net and furnished with the appropriate area code without callers ever being aware that some of their calls were being carried off-net.

With EPSCS, a similar reprogramming process was technically possible, but the costs associated with making changes to the 14 shared AT&T switches would have been astronomical, Haerland explains. "AT&T would charge us for every change in every switch, and this was too high a price to pay," he says.

As a result, Unisys opted to abandon the EPSCS net and instead implement a hybrid ETN to handle both voice and data traffic. This ETN was based on the in-place T-1 backbone system and AT&T's Software-Defined Network (SDN) services. After a six-month analysis of various options, the hybrid network was cut over in the spring of 1988.

"We looked at all of our locations and our voice traffic volumes, which ranged between six million and seven million minutes per month," Haerland recalls. "We also looked at all kinds of ways of slicing up this volume, including putting all of our traffic on the ETN and taking out the ETN entirely and placing all traffic on SDN."

Unisys chose the hybrid ETN for two reasons. First, the company already had T-1 pipes in place. "The idea was to fill these T-1s to capacity," Haerland says.

Second, there were cost considerations. "As ETN technology and T-1s catch on, the price of T-1s keeps going down. Meanwhile, the cost of access lines keeps going up," he notes.

Unisys' ETN strategy called for using existing System 85 PBXs as ETN nodes. It also required either installing or upgrading switches and software at hundreds of other smaller locations.

Haerland pegs the company's initial investment in the ETN at $20 million. This figure could have totaled some $5 million or $6 million more if the company had installed all new PBXs, instead of tearing down, packing, warehousing, then reinstalling its base of multivendor switches as various Burroughs and Sperry sites were closed and other Unisys locations were opened.

"We decided to take a close look at what it would take to disconnect, pack, check and reinstall PBXs we already had because once you have an ETN in place, you can hang anything off of it," Haerland explains. "Basically, our strategy came down to using what we had, and we had everything — switches from NEC [Corp.], Rolm [Corp.], Northern Telecom [Inc.] and Siemens [AG]. As long as they worked and supported our business, we used them."

> Unisys opted to abandon the EPSCS net and instead implement a hybrid ETN to handle both voice and data.
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Unisys' replacement PBX strategy involved not only moving and reinstalling switches but also reselling older analog equipment and cannibalizing still other switches for upgrades. Looking back on it, Haerland estimates that Unisys filled perhaps 10% of its PBX requirements with new equipment, spending a total of about $5 million.

Today, Unisys' per-unit voice cost is about 21 cents per minute. This compares with a per-unit cost of just over 30 cents per minute in 1986. The current figure, which includes organizational overhead for all voice traffic, is expected to drop to less than 20 cents any day now, according to Haerland, who attributes declining costs

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TUESDAY, JUNE 20

9:30 A.M. — 4:30 P.M.

Tutorial-1
SNA Network Management
You will learn about the latest trends in SNA network management and products, with an emphasis on the information you need to exploit the capabilities of various SNA network management tools in managing your network. Instructor is L. David Passmore, Partner, Network Strategies, a practice of Ernst & Whinney. Mr. Passmore is a frequent lecturer at industry conferences and teaches 3-day seminars for Systems Technology Forum.

Tutorial-2
T1 Network Management
This tutorial will give you in-depth coverage of the latest strategies and equipment for building and operating T1 networks. Coverage will include diagnostics, testing, dynamic bandwidth positioning, auto reroute, PC or workstation displays, and the impact of T3, UNMA, NetView, OSI, LAN/WAN internetworking and carrier-based T1 networks. Instructor is Timothy G. Zerbiec, Principal and Vice President of Technology for Vertical Systems Group in Boston.

Tutorial-3
Integrated and Automated Network Management
Network management is now an important strategic issue for users and vendors. This tutorial will review the two major standards for inter-system transfer of management information: the SNA-based de facto standard from IBM and a vendor-independent standard based on OSI protocols. It will chart a course for future improvements towards integrated management systems and a new generation of expert system management applications. Instructor is James G. Herman, a Principal with Northeast Consulting Resources, Inc. and well known writer and lecturer on network management and planning issues.

Tutorial-4
LAN Management
This tutorial will take an in-depth look into the management of today's LANs. Topics will include design, implementation, operational management and the evolution of LANs. You will receive guidance in evaluating design alternatives, equipment acquisition decisions and useful techniques in LAN management. Instructor is David deS. Couch, Corporate Communications Manager, Spartan Stores. He is currently responsible for the design and implementation of the corporate communication network for Spartan's corporate offices and 500 member retail stores.

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WEDNESDAY, JUNE 21

8:00 — 10:00 A.M.
X.1 Industry News and Announcements
The latest networking product news in a panel session chaired by Gary Beach of *Network World.*

10:15 — 11:00 A.M.
X.2 Keynote Address
By Mark Teflian, Vice President for Technical Planning and System Engineering, Covia, a partnership of United Airlines, US Air, British Airway, KLM Royal Dutch Airways, Swiss Air and Alitalia.

11:15 A.M. — Noon
Sponsor Briefings
Save time and effort by learning current network management solutions from key industry players such as Data Switch Corp., Infotron, Northern Telecom, Inc., Strata-Com, Inc. and Timeplex, Inc. These sessions will deliver maximum information in a minimum amount of time.

12:00 — 1:30 P.M.
Lunch
Excellent time to visit demonstration suites.

1:30 — 2:15 P.M.
2.1 Real Time Management
This session will provide a "how-to" approach for operating networks for real time processing.

2.2 Implementing the Standards — Progress Towards OSI
The standards community activists will bring you up-to-date on progress of making network management under OSI "real."

2:30 — 3:15 P.M.
Sponsor Briefings

3:30 — 4:15 P.M.
4.1 LAN Management
In the face of many different LAN standards and products, how will the LAN users "migrate" towards a standards-based universal solution?

4.2 The Next Five Years: Technology Forecast
The senior technical members of the OSI/Network Management Forum will present a formal technological forecast of hardware, software and carrier service developments in network management.

4:30 — 5:15 P.M.
Sponsor Briefings

to the continuous installation of T-1 circuits.

"If we have enough traffic between voice and data to even get close to a T-1, we'll put one in," he says, adding, "We expect the cost of T-1 circuits to keep going down."

The data network

Within weeks of the merger, MIS and telecommunications representatives from both Burroughs and Sperry decided that an X.25-based net — now known as UNIDATS — would best meet Unisys' data transmission needs.

"The economics of a packet-switched net and the ease of redundant routing and end-to-end packet verification would make for a very robust network," Haerland explains.

The team also decided to implement Sperry's Distributed Communications Processor (DCP) front-end communications processors as network nodes. This was because the DCP was a mature product, up and running at hundreds of Sperry locations. Also, Burroughs' own communications processor, the CP2000, had not been released yet.

Finally, it was agreed that DEVNET, a separate engineering network inherited from the Sperry side of the house, should remain separate because of the experimental nature of its applications.

Almost equal in size to the UNIDATS corporate network, DEVNET links 145 host systems and includes 123 DCPs. Its chief purpose is to support all developmental operations of the company. Among other things, it serves as a test bed for all new communications software.

"A key element of supporting development is evaluating and operating all hardware and software products before end users see them," explains William Menkevich, group manager for data communications at Unisys' Roseville, Minn., installation, where DEVNET is headquartered. "On UNIDATS, which is a corporate financial and control network, we have to be more cautious about running new hardware and software because there's a greater need for stability and clearly a defined need to take a lesser risk."

Bridging the gap

With these decisions made, Unisys now had both a strategy as well as network capacity on its T-1 backbone. What the company lacked was software that would allow communications between Sperry's distributed network architecture and installed base of DCPs and its new partner's host-based Burroughs Network Architecture.

"The biggest problem was that the DCP product only talked to half of the company," Haerland says. "Our obvious next step was to build software that allowed the DCPs to talk to all parts of the company."

The need to bridge the two architectures was a ticklish matter within Unisys. The company had already publicly assured customers that its intentions were to continue enhancing both product lines. "As a result, the concept of bridging the two architectures was not only unimportant from a product development point of view, it also would have sent customers the wrong message," Haerland notes.

"Also, this wasn't a high priority for the company because there were hardly any customers with both kinds of systems installed," he adds. "Our only choice was to fund the development of software ourselves."

Gilbert Piddington, Unisys' vice-president and program general manager for communications and networks, sums up the dilemma succinctly: "We were our own biggest problem."

> "It was fairly rough for a while. Essentially, it was a total hoodwink. We had mainframes and terminals pretending to be something they weren't."
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Of course, developing this software took time — 18 months in all. For several months, many Unisys workers had two terminals on their desks while others took advantage of mutual emulation techniques Haerland and his staff had cooked up using third-party emulation software packages and Binary Synchronous Communications emulation capabilities embedded in both architectures.

For example, mainframe-based software supplied by Joseph & Cogan Associates, Inc., owned by Unisys, allowed both Burroughs and Sperry mainframes to communicate via BSC emulation. Similarly, Burroughs and Sperry terminals emulated BSC or 3270-type terminals using Unisys' own internally developed emulation software, which was stored in DCPs.

"We started with a most rudimentary approach of carrying tapes from one building to another; after a while, we devised all kinds of quick and dirty methods, including using emulation in some places," Haerland recalls. "It was fairly rough there for a while. Essentially, it was a total hoodwink. We had both mainframes and terminals pretending to be something they weren't."

Internally developed software now in place at Unisys provides a data communications equipment interface capable of operating the DCP-based net as a full-fledged X.25 system.

DCP software also allows any type of terminal to communicate with any main-

(continued on page 38)

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THURSDAY, JUNE 22

8:30 — 9:15 A.M.
6.1 IBM NetView PC Products
The current and expected capabilities of the IBM PC and PS/2 approach to network management will be reviewed and discussed.

6.2 Packet Network Management
This session will give you some approaches and solutions to the management problems of packet networks.

9:30 — 10:15 A.M.
Sponsor Briefings

10:30 — 11:15 A.M.
8.1 TCP/IP Network Management
This session compares Simple Network Management Protocol (SNMP) with other methods of network management and shows how it could evolve into an OSI approach in the future.

8.2 Expert Systems/AI-based Network Management
In this session you will learn how artificial intelligence-based systems offer users a "smart" package to manage the network management system.

11:30 A.M. — 12:15 P.M.
Sponsor Briefings

12:00 — 1:30 P.M.
Lunch
Another good opportunity to visit demonstration suites.

1:30 — 2:15 P.M.
10.1 Managing IBM Networks without NetView
This session will define mainstream approaches to managing IBM System Network Architecture (SNA) networks, and present case histories.

10.2 User Administration
Many user organizations find network management costs for hardware, people and administration an unplanned expense. How can the cost be justified? What mechanisms can be used to provide "hands-off" control of the network as a part of the basic architecture?

2:30 — 3:15 P.M.
Sponsor Briefings

3:30 — 4:15 P.M.
12.1 User Experience Panel
In a fitting program finale, actual case histories of successful network management implementation will be presented by the winners and runners-up for the *Network World* NMS Award.

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	Conference	Wednesday 8:00 A.M. - 5:15 P.M. Thursday 8:30 A.M. - 4:15 P.M.
	Demonstration Suites	Tuesday 4:30 P.M. - 6:30 P.M. Wednesday 10:00 A.M. - 6:00 P.M. Thursday 10:00 A.M. - 4:00 P.M.

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A united front

continued from page 37

frame, whether located on UNIDATS or DEVNET.

Essentially, this software connects Poll-Select terminals to A/B Series mainframes via X.25 and provides data stream conversion and session establishment between UTS and Poll-Select protocols. Also, the software allows Poll-Select terminal users to access 1100 applications.

Such backward-compatible capabilities were necessary because business applications from both sides of the house eventually were incorporated into the company's overall MIS operations, explains Bill Hoeltz, Unisys' director of network support services.

> "We wanted to go with Timeplex, but the problem was what to do with the NET equipment we had."
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"What we ended up with is a complete mix of everything we had before," Haerland says. "Some applications run on the A Series platform, while others run on the 1100 and 2200 platform. Similarly, some use Poll-Select terminals, and some use UTS terminals."

While the bridge software was being developed, Unisys set about incorporating the two companies' data nets into the T-1 backbone, which now contains more than 90 1.544M circuits.

Prior to the merger, Sperry's data net consisted of multiple DCPs linked over 9.6K bit/sec channels, while Burroughs used 56K bit/sec circuits networked together via packet switches from Telenet and multiplexing equipment from Infotron Systems Corp.

"We took advantage of the T-1's transmission potential by taking more and more circuits from both nets and folding them together," Haerland explains. "We also took some of the Sperry circuits and put them into the medium-speed Infotron multiplexed network that we had from the Burroughs side.

"Wherever it fit, we put a Sperry tail circuit in on one end and brought it out on the other," he continues. "The whole objective — since we couldn't have the data flow in one set of packets — was to at least have it flow on one set of wires."

The Unisys data network is now integrated so that what once were Sperry terminal circuits are terminated at Infotron multiplexers acquired from the Burroughs side of the house. These, in turn, are linked to T-1 multiplexers furnished by Network Equipment Technologies, Inc. (NET) and Timeplex, Inc., which Unisys acquired in late 1987.

Both voice and data are carried over the T-1 network, which incorporates the DCPs as network nodes and front-end processors. Portions of the T-1 backbone are also used by DEVNET, which purchases bandwidth from UNIDATS.

While buying Timeplex provided Unisys with a technologically sophisticated ally in the T-1 world, it also posed certain strategic problems and a few technical headaches.

"When we bought Timeplex, we bought a company whose biggest competitor's products happened to be used in our network," Haerland explains. "Clearly, from a strategic point of view, we wanted to go with Timeplex, but the problem was what to do with the NET equipment we had."

Avoiding the unpalatable

Here again, Unisys adopted a "make do with what's in place" strategy. "There's something unpalatable about taking perfectly good multiplexers and replacing them with other perfectly good multiplexers in order to make some sort of marketing statement," Haerland explains.

On the technical side, using both types of multiplexers requires the adjustment of clocking, timing and parameter setups. But, according to Haerland, "it all works surprisingly well, thanks to the skill and knowledge of people in our network control center."

Unisys' network control center at its headquarters in Blue Bell handles the day-to-day operations of the corporation's worldwide networks.

Staffed around the clock, seven days a week, its chief responsibilities are to maintain network integrity, performance and reliability. Every two weeks, a top-to-bottom network reconfiguration is performed, a necessity given the fact that between 1,500 and 2,000 terminals are added to the net each month.

Over the last year, Hoeltz estimates that his staff of 70 has also overseen the addition of some 40 new network nodes.

Decentralized approach

On top of handling reconfigurations and daily network monitoring, which includes polling 150 DCPs worldwide an average of every 15 seconds, this group also manages all networking aspects of the company's multivendor PBX base.

Unisys' use of equipment from Infotron, Timeplex and General DataComm, Inc. requires three network management systems. According to Hoeltz, these systems will soon be integrated using internally developed software, and they will eliminate the use of three separate network monitoring screens in the network control center. The company declined to provide details on the software.

While the center handles all networking functions, PBX software upgrades and expansions are handled locally at hundreds of Unisys locations around the world. This division of work is at the crux of Unisys' "decentralized accountability" approach to telecommunications.

"While the [network control center] is the central management arm that handles day-to-day operations, we need people with skills, a sense of authority and a sense of accountability at all of our locations," Haerland explains. "We concluded that these people should not be part of the telecom operation, but instead a part of the user community they serve."

As a result, there is a designated person or group of people at each Unisys site to whom communications requests are submitted. These people, in turn, either handle the problems themselves or see that they are resolved by the network control and operations staff in Blue Bell.

In addition, another 50 or so communications staffers continue to work out of Detroit, where all network engineering is carried out and where major network projects are implemented.

With UNIDATS now in place connecting all Unisys sites, Haerland says his team is charged with the more challenging task of "putting telecommunications technology into Unisys' business process."

This involves developing tools and applications that will enable the corporation to use its network more efficiently. For example, the telecommunications department is currently using artificial intelligence to build software that will allow Unisys salespeople to access host-based information and perform configurations, constructions and pricing evaluations to analyze the profitability of various sales deals.

The company is also implementing the X12 standard for electronic data interchange with suppliers and expanding on-line access to customers for remote diagnostics and software upgrades.

"It's only now that we're getting out from under this merger, which has really been a matter of learning to live with both ways of doing business," Haerland says. "Clearly, though, there's a significant role that telecom will continue to play."

Heavy static

continued from page 30

In 1986, Norlight sought and received an FCC declaration stating that it was a private interstate carrier subject to regulation by the FCC and not state public service commissions (PSC); thus, it could provide competitive pricing without having to file tariffs or ask permission from a PSC.

The Wisconsin PSC appealed first to the FCC and then to the U.S. Court of Appeals to reverse the decision. The Utilities Telecommunications Council (UTC) lobbied with Norlight to defend the original decision and recently convinced the Wisconsin PSC to drop the case. However, while Norlight won the battle, it incurred unanticipated legal expenses and a two-year delay.

Frequent challenges

Inroads are being made into once-protected radio frequency assignments. At one time, direct broadcast satellite (DBS) technology, which is used to broadcast directly to small dish antennas on rooftops across the country, was touted as the future of television. DBS coalitions successfully petitioned the FCC and won frequency assignments in the 12-GHz bands, forcing utilities to rebuild their microwave networks in the 2-, 6-, 18- and 23-GHz bands. This requirement cost utilities (more accurately, utility customers) millions of dollars. But DBS never took off.

Another blow came when the same FCC rulings that allow utilities to sell capacity on private nets opened the door for entrepreneurs to build networks for resale purposes. Once again, the result was fewer operating frequencies for utility operations.

Despite the bleak picture painted by the above examples, the utilities are not powerless. The UTC acts as the utilities' watchdog on these matters and has an excellent track record of protecting the interests of its 2,200 members. The group participates in all regulatory matters that can potentially affect the operation of utility nets.

Its participation in the Norlight case is an example of how the UTC effectively voiced the opinion of its membership to help influence those setting policy. The UTC also is currently fighting for the reduction of the monthly $25 per-month per-line "leaky PBX" surcharge that has been imposed by the FCC on all networks that can pass long-distance calls onto the local network.

A high-fiber diet

Many utilities concerned about the health of their networks are increasingly using fiber — glass, not bran. Utilities have found a great way to implement fiber backbones while performing needed maintenance on high-voltage towers.

Optical ground wires (high-voltage tower ground wires with fiber-optic strands embedded within the cable) provide electrical utilities with the opportunity to put fiber backbones in place along established rights-of-way. These backbones are almost totally concealed, providing security and eliminating the need for renegotiation of tower and land right-of-way contracts.

Perhaps the most appealing benefit of fiber optics is its inherent immunity to ground potential problems. For the first time, utilities and telephone companies can interconnect without the risk of introducing dangerous voltage potentials into the telephone network. Still, utilities must find ways to cost-justify the implementation of these networks; aggressive communications managers have championed the cause of excess capacity resale. Those that overcome the difficulties mentioned earlier will be positioned to take advantage of future communications opportunities.

So where does all this leave the utilities? Are the pioneers of communications networking doomed to obsolescence due to increased internal attention to the bottom line and external pressures to keep them in their traditional roles? It will depend on the skills of the communications professionals within these organizations to extend their use of communications technology.

> Are the pioneers of communications networking doomed to obsolescence?
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Today's communications professionals are becoming better at showing upper management that communications is critical to the organization. Although a real need exists to suppress the urge to implement technology for the sake of technology, continued research will reveal better communications methods that support management's objectives.

Letters

continued from page 27

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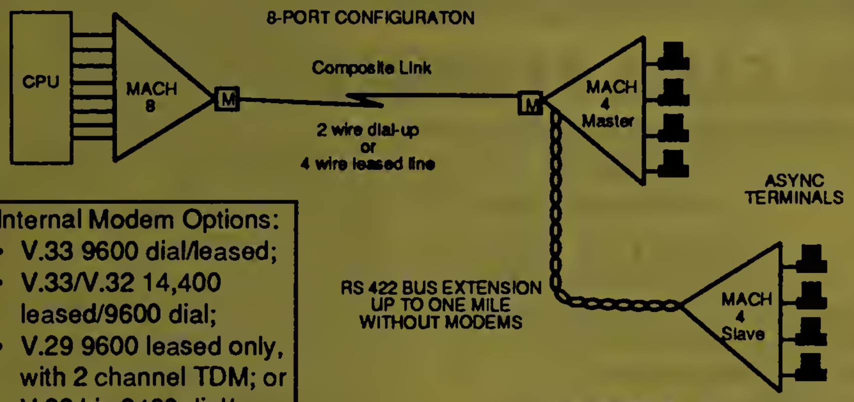
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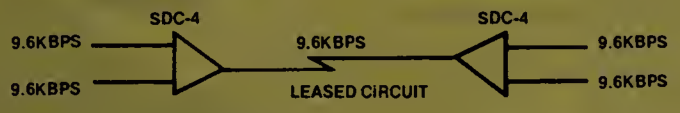

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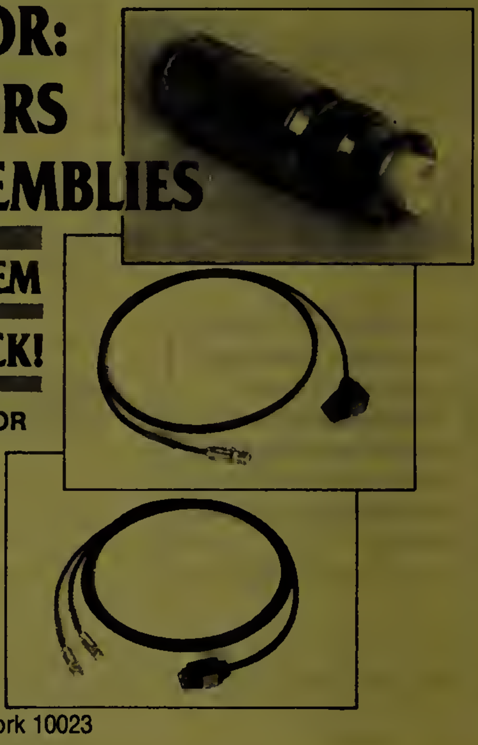

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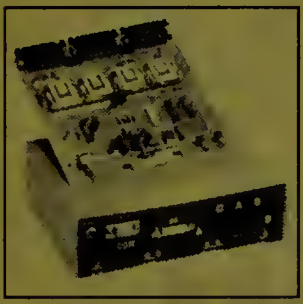

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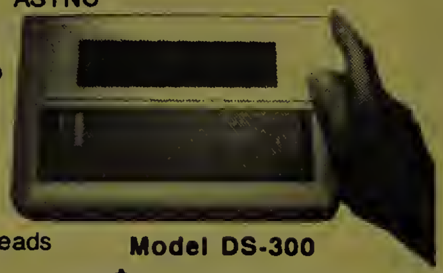

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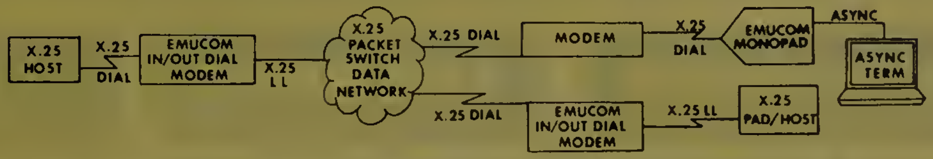

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Vendors ready PS/2 applications for SAA

NEW YORK — Fourteen software vendors last week said they are writing IBM Personal System/2-based applications that support IBM's Systems Application Architecture (SAA).

Many of the vendors demonstrated prototypes of their programs at a press conference here at which IBM announced OfficeVision, its first SAA application. The third-party applications will support cooperative processing, enabling Personal System/2 users to access data and applications residing on larger IBM systems by using common network protocols such as LU 6.2 and command syntax such as SQL.

The applications will run under IBM's OS/2 Extended Edition and will comply with SAA's Common User Access interface specification, which enables users to invoke communications and data access functions by selecting appropriate icons from the Personal System/2 screen.

Lotus Development Corp. is developing 1-2-3G, a version of its spreadsheet that will work hand in hand with 1-2-3M, a mainframe-based version of 1-2-3 that Lotus is developing. Microsoft Corp. said it is developing a version of its Excel spreadsheet that supports SAA.

McCormack & Dodge Corp. is developing Millennium SAA Workstation, which will work with its mainframe-based applications and allow Personal System/2 users to retrieve data from IBM host-based DB2 data bases.

Information Builders, Inc. is building PM/Focus, which will let Personal System/2s retrieve data from IBM's OS/2 Extended Edition Data Base Manager and work with host-based Focus software to retrieve data from IBM's SQL/DS and DB2 DBMSs, as well as IBM's OS/400 native DBMS on Application System/400 minicomputers.

Other companies pledging to build SAA-compliant applications are American Management Systems, Inc., American Software, Inc., Arthur Andersen & Co., Comshare, Inc., Integral Systems, Inc., Management Science America, Inc., Policy Management Systems Corp., SAS Institute, Inc., Sterling Software, Inc. and Tesseract Corp.

The products are expected to ship between the third quarter of 1989 and mid-1990.

— Jim Brown

IBM unveils PS/2 pack for data requests

The software builds queries using screen icons.

NEW YORK — IBM last week introduced software that lets Personal System/2 users retrieve data from IBM's host-based SQL/DS or DB2 data bases by building queries using screen icons.

Jointly developed by IBM and Metaphor Computer Systems, Inc. of Mountain View, Calif., the Data Interpretation System includes software for Personal System/2 Model 70s or Model 80s attached to 16M bit/sec Token-Ring Networks as well as software for System/370 mainframes running MVS or VM.

The Personal System/2 portion of the software includes a data retrieval tool kit called Capsule. To build data requests, users move icons that represent specific commands into a Capsule window on the Personal System/2 screen. Once in the window, users denote the sequence in which the commands must be executed by using an arrow icon to link them. Capsule transparently builds the actual data access request.

The request is forwarded over a Systems Network Architecture network using LU 6.2 peer communications protocols. Data Interpretation System Host Client software running on the host executes the data access request and downloads the data to the Personal System/2.

Entire Capsule sequences can be stored as a single icon and executed at a later time or as part of another data request.

Many elements of IBM's Common User Access, the graphical user interface specification detailed in its Systems Application Architecture blueprint, are built into Data Interpretation System.

Data Interpretation Host Client software that provides access to IBM relational data bases such as SQL/DS and DB2 ranges in price from $6,670 to $40,000. A software license for 20 Token-Ring-attached microcomputer users costs $135,000. The software will be available in September.

— Jim Brown

IBM SAA programs offer unity

continued from page 1

In support of OfficeVision, IBM also announced an enhanced version of its OS/2 Standard and Extended Edition operating systems for its Personal System/2 line (see "OS/2 Extended Edition to support Ethernet adapters," page 4).

In conjunction with the IBM announcement, 14 software developers, including Lotus Development Corp., Microsoft Corp. and Information Builders, Inc., said they are developing SAA-based applications (see "Vendors ready PS/2 applications for SAA," this page).

Analysts praised the OfficeVision announcement, saying it is the first time IBM has offered software that runs the same way on one system as it does on another. "From what we saw in demonstrations, IBM is well on its way to achieving what it has set out to achieve with SAA," said Virginia Ewell, director of distributed systems research with Boston-based The Yankee Group.

Brian Jeffery, managing director for International Technology Group in Los Altos, Calif., said, "This is the first time IBM has publicly clarified the concept of workstation-to-host cooperative processing."

Look and feel

As specified in SAA, the OfficeVision products — OfficeVision/MVS, OfficeVision/VM, OfficeVision/400 and OfficeVision/2 LAN Series — use a common user interface called Common User Access (CUA) and a common set of network protocols, including LU 6.2. CUA allows users to invoke communications and data access commands simply by selecting icons displayed on an OS/2-based Personal System/2, DOS-based Personal Computer or terminal screen.

One piece of an OfficeVision package, the so-called server portion, resides on a mainframe, an AS/400 minicomputer or a Token-Ring Network server running OS/2 LAN Server.

The server portion supports integrated office capabilities and other services, including communications services. It works with OfficeVision client software on OS/2-based Personal System/2s or DOS-based workstations. Mainframe and AS/400 terminals rely on host-based OfficeVision software for all processing chores.

IBM and Consumers Software, Inc., a Vancouver-based maker of DOS-based local network E-mail software, jointly developed the DOS-based client software. That DOS software does not support the full SAA graphical interface.

OfficeVision releases

An initial release of OfficeVision/2 LAN Series, due out in September, enables Token-Ring-attached Personal System/2s running OS/2 Extended Edition 1.1 and DOS-based Personal Computers to exchange E-mail messages, documents and data with larger systems supporting OfficeVision.

A second release, due out in early 1990, will support workstations running OS/2 Extended Edition 1.2. OfficeVision/2 LAN Series server and client software each cost $750. DOS-based client software costs $210 per copy.

The first release of host-based OfficeVision software will enable attached terminals and DOS-based Personal Computers to share data and exchange messages with other host and local networks supporting OfficeVision.

> "IBM is well on its way to achieving what it has set out to achieve with SAA."
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A second release will support directly attached OS/2 Extended Edition 1.2-based Personal System/2s running OfficeVision client software.

The first release of OfficeVision/MVS, which will work with existing DISOSS software, is due out in September. The second release is due out in early 1990. Pricing ranges from $15,130 to $51,000.

Initial releases of OfficeVision/VM, which can work with existing IBM Professional Office System software, and OfficeVision/400, which replaces AS/400 Office, are both due out in December. The second releases are due in the second quarter of 1990. OfficeVision/VM ranges in price from $8,500 to $51,000, while OfficeVision/400 costs between $2,885 and $28,640.

Much of the functionality in the second release of OfficeVision will be based on an enhanced user interface built into OS/2 Standard Edition and Extended Edition 1.2. The enhanced user interface, called Desktop Manager/File Manager, supports multiple on-screen icons that comply with SAA's CUA specifications.

Enhanced OS/2 EE

IBM also enhanced the Communications Manager and Data Base Manager components in Release 1.2 of OS/2 Extended Edition, which is scheduled to ship in September. The enhanced Communications Manager component enables Personal System/2s to be linked to Ethernets. Previously, OS/2 Extended Edition supported IBM Token-Ring Networks only.

The enhanced Communications Manager component also includes a new SNA Gateway feature that enables a Token-Ring-attached Personal System/2 to support as many as 254 concurrent host sessions, which can be shared among workstations on the network. The gateway links to the host via a Synchronous Data Link Control, X.25 or Token-Ring attachment.

Data Base Manager was enhanced to support Remote Data Services, which enables a Token-Ring-attached workstation to access data residing on other Personal System/2s on the net.

With OS/2 Extended Edition 1.2, IBM is increasing its commitment to Microsoft Corp.'s OS/2 LAN Manager technology. The new release will support a number of additional LAN Manager APIs, allowing software written to those APIs to run on both LAN Manager and IBM's LAN Server local networks.

OS/2 Extended Edition 1.2 remains priced at $830, and current users of OS/2 Extended Edition can upgrade for free.

IBM testing gear debuts in U.S.

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background. Data collected from the monitor board can be loaded into existing applications, such as Lotus Development Corp.'s Lotus 1-2-3 spreadsheets.

In addition to supporting the monitoring functions of SpiderMonitor 220, SpiderAnalyzer 320 includes software that enables managers to decode and analyze network protocols to determine whether particular packets conform to standards.

SpiderAnalyzer 320 software allows users to decode Novell, Inc. NetWare protocols; IBM's Network Basic I/O System; IBM and Microsoft Corp.'s Server Message Block; the Transmission Control Protocol/Internet Protocol; the International Standards Organization's Open Systems Interconnection; Xerox Corp.'s Xerox Network Systems; and Digital Equipment Corp.'s DECnet.

It will also enable users to build software routines that decode user proprietary network protocols. The analyzer lets managers decode and analyze all seven layers of applications using these protocols.

SpiderMonitor 220 and SpiderAnalyzer 320 require a Personal Computer with DOS Version 2.0 or above, a 5M-byte hard disk, 640K bytes of random-access memory and a floppy disk drive.

SpiderMonitor 220 ranges in price from $7,000 to $8,000, while SpiderAnalyzer 320 ranges from $12,000 to $13,000.

Spider Systems can be reached by writing to 12 New England Executive Park, Burlington, Mass. 01803, or by calling (617) 270-3510.

Net control meet draws experts

continued from page 1

agement for the MAP/TOP Users Group in Ann Arbor, Mich. "The OSI standards needed to correct this are simply lacking."

Daniel Stokesberry, manager of the network management and performance group at NIST, says, "1989 is a make or break year. Unless the international standards become sufficiently stable, vendors may get impatient and go ahead with their own proprietary standards, which means it will be several more years before we have truly integrated network management."

NIST, which helps establish information systems procurement standards for the federal government, among other things, is betting significant progress will be made this year.

According to Stokesberry, NIST hopes international net management standards will progress to the point where it can require compliance with them in federal procurements beginning in 1990. Now, however, Stokesberry said, this seems unlikely.

"Our stance is very aggressive," he said. "Unless the standards groups meet their goals, which doesn't seem likely, we may have to back off a bit."

Vendor displays

In addition to swapping ideas, attendees used the conference to pore over vendor presentations. Stephen Plagemann, project manager at Broadcom Eireann Research, Ltd., a Dublin, Ireland-based concern that researches network management for the European Commission, described the demonstrations as the most comprehensive he had seen at a single event.

The IBM demonstration, which debuted on the third day of the show, consisted of a prototypical NetView graphical interface running on an IBM Personal System/2 microcomputer.

The prototype software was programmed to manage a mock Systems Network Architecture network.

It showed geographical and logical representations of the network and demonstrated how different colors would be used to designate trouble alerts.

According to Jeff Ferla, a staff programmer in the long-term network management strategy division of IBM, the company showed the prototype to get feedback on how effective it is and whether or not it is more useful than the company's current alphanumeric interface.

"Making this kind of thing is a very complex task, and we don't want to jump right in before we get adequate input," he said.

Other vendors making presentations at the show included Digital Equipment Corp., MCI Communications Corp., Boeing Computer Services, Inc. and the Open Systems Interconnection/Network Management Forum. ◘

Software links NetView, NEC's net mgmt. system

By Paul Desmond
Senior Writer

NEW YORK — Systems Strategies, Inc. last week said it will provide NEC America, Inc.'s Data and Video Communications Subsystem Division with software that will give NEC's Xenix-based net management system a direct link to IBM's NetView.

The NEC division will sell Systems Strategies' API/NetView software as an option for its Network Control and Management System (NCMS)/PC 386, which is used to manage NEC's modems and data service unit/channel service units (DSU/CSU).

API/NetView will allow NCMS/PC 386 to send alerts to NetView without going through IBM's NetView/PC, said Doreen Pizarro, product line manager at NEC. But API/NetView will also enable the NEC Powermate workstation on which it runs to emulate an IBM 3270 terminal, giving the NCMS/PC 386 operator a window into NetView.

The software also supports 3770 emulation, Pizarro said. The 3770 is a remote job entry terminal that can be used to send inventory, configuration or trouble ticket data to NetView for problem management.

"We're doing three things with one FEP port," she said. "NetView/PC does not have 3770 and 3270 capabilities. It's just a dumb box that sits there and translates alarms for you," she said. Also, NetView/PC creates an additional potential point of failure.

Pizarro said NEC will sell the NetView option for $8,000.

The initial release of the NetView option for NCMS/PC 386 does not allow NetView to control NEC modems and DSU/CSUs, but NEC is planning to add that function, she said.

> API/NetView will enable the NEC Powermate to emulate an IBM 3270 terminal.
>
> ▲▲▲

Systems Strategies also sells its API/NetView software, which runs on Unix-based workstations from various vendors. The software costs $2,000 and includes a tool kit for application development, said Norm Friedman, vice-president of software development for the company. ◘

Calendar

June 11-14, Boston — Integrating An Infrastructure. Contact: Association of Data Communications Users, P.O. Box 20163, Bloomington, Minn. 55420; (612) 881-6803.

June 12-14, San Francisco — Data Communications Network Design and Optimization. Contact: Institute for Advanced Technology, 8800 Queen Ave. S., Bloomington, Minn. 55431; (612) 921-7000.

June 12-14, Chicago — DB2 Tools Symposium. Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810; (508) 470-3880.

June 12-15, San Francisco — James Martin World Seminar. Contact: Technology Transfer Institute, 741 Tenth St., Santa Monica, Calif. 90402; (213) 394-8305.

June 13, Toronto — Second Annual Personal Computer Conference. Contact: International Data Corp. Canada, Suite 1000, 7 King St. E., Toronto, Ont., Canada, M5C 1A2; (416) 369-0033.

June 13-14, Atlanta — PC Networking. Contact: InfoLan, P.O. Box 162323, Austin, Texas 78716; (512) 328-4636.

June 13-16, Boston — Computer Management & Network Control. Contact: Integrated Computer Systems, Suite 300, 8000 Towers Crescent Drive, Vienna, Va. 22180; (703) 893-3555.

June 14-15, New York — SWITCHING '89: PBX, Centrex & Key. Contact: Eastern Management Group, 4 Century Drive, Parsippany, N.J. 07054; (201) 267-3700.

June 14-15, San Francisco — Intelligent Building Wiring: Alternatives and Applications. Contact: Intelligent Buildings Institute Foundation, Suite 300, 2101 L St. N.W., Washington, D.C. 20037; (202) 457-1988.

June 20-22, Chicago — Network Management Solutions '89. Contact: International Data Conference Management Group, 375 Cochituate Road, Framingham, Mass. 01701; (800) 225-4698, ext. 646.

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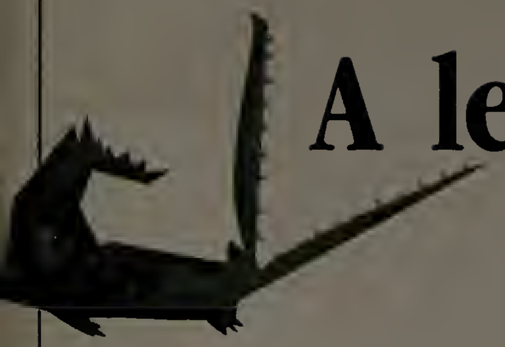
ALLIGATORS IN THE SWAMP

Unforeseen problems that can put the bite on your network operation



A lesson learned the hard way

BY JOE WISE

It all started when Mr. Naive changed jobs after 4½ years with a small company. After seven months in his new job, the four-hour daily commute and the shaky condition of his new department started getting to him. A particularly bad day at the office and a three-hour delay in the subway on the way home finally drove him to arrange an open-house interview with one of the huge companies advertising in the local newspaper.

The next day, Mr. Smooth of Company X interviewed him and examined his credentials. Two days later, having decided that Mr. Naive would make a great addition to Company X, Mr. Smooth called him and asked him to come back and interview with his manager, the Supreme Being of All (SBA).

Eager to work at such a great company, Mr. Naive went. The SBA gave him a pep talk about what a great department he was running, led Mr. Naive through impressive rows of equipment in the computer room and turned him over to the personnel department.

Too good to be true . . .

The personnel manager impressed Mr. Naive with tales of the company's stock options and its Bean Sharing Plan, and told him that Company X was the ideal place from which to retire. Mr. Naive left the MIS headquarters with a stack of books on corporate policies and company philosophy. He was impressed. Everything looked almost too good to be true.

Mr. Naive must have made a good impression. Two weeks after his second interview, the personnel manager sent Mr. Naive an offer letter. The letter said: "Dear Sir, we are offering you the position of senior communications whiz at the salary of one sack of beans a month." Mr. Naive was astounded. An offer letter less than half a page long! No disclaimers! No specifics! That was unusual. The other problem was that the position he was offered was below his current position and accordingly paid a lower salary.

The next day, he called Mr. Smooth to ask him about the letter. Mr. Smooth was reassuring: "Don't worry, that is personnel's standard operating procedure. What we are really offering you is the position of 'manager of all things to come.' You will be the guy planning the strategy of the department, and you will be involved with . . ."

The rosy picture Mr. Smooth painted and the great career path flashing in front of Mr. Naive's eyes made him lose his head. It was the career move he was looking for, and it was so close to home.

So, after struggling for a couple of days, he accepted a lower position and salary than his current one, in exchange for a great future and participation in the Bean Sharing Plan. He gave his notice to his boss and showed up for work at Company X three weeks later.

A mutually beneficial relationship

For three months, Mr. Naive did great. Everybody felt him out and tested his knowledge. His manager, Mr. Smooth, was satisfied and was painting an even rosier picture of his plans for Mr. Naive. Even the SBA commented on Mr. Naive's fast adaptation. Everybody in the department thought that although Mr. Naive was a little different than most of Company X's employees, he was good at his job and was a solid sounding board for ideas. For his part, Mr. Naive kept to himself and concentrated on his job. Then one day, another employee caught his attention.

Mr. Sycophant was an analyst who had been with the company for three years. He had a fair amount of experience and a level of knowledge similar to that of the people who used to work for Mr. Naive in his previous jobs. Mr. Sycophant spent a lot of time in the SBA's office for no apparent reason. During these visits, Mr. Sycophant and the SBA were always laughing and giggling, and they seemed to be extremely friendly. So Mr. Naive said to himself: "Self, this guy can learn a lot from your experience, and he can show you how people operate around here."

Mr. Naive then struck up a friendship with Mr. Sycophant that seemed to be mutually beneficial. Mr. Naive shared his job-related knowledge with Mr. Sycophant. In return, Mr. Sycophant showed Mr. Naive the political ropes and introduced him to many people.

Mr. Sycophant kept telling Mr. Naive how glad he was to be working so closely with him and his great knowledge. However, Mr. Sycophant kept belittling Mr. Smooth, telling tales of mistreatment and deceit. Every now and then, the SBA would call Mr. Sycophant and Mr. Naive into the office and ask them questions about Mr. Smooth's performance. Mr. Sycophant never had anything good to say, but Mr. Naive was always honest, giving his opinions on both the good and bad attributes of Mr. Smooth.

One day Mr. Smooth's department was given responsibility for a large project, and Mr. Naive was considered one of the people who were important to its success. Both Mr. Naive and Mr. Sycophant considered Mr. Smooth's laid-back attitude toward the project to be a real problem. When asked by the SBA about this, they expressed their opinions, with Mr. Sycophant stressing that under no circumstances would he work under Mr. Smooth's direction.

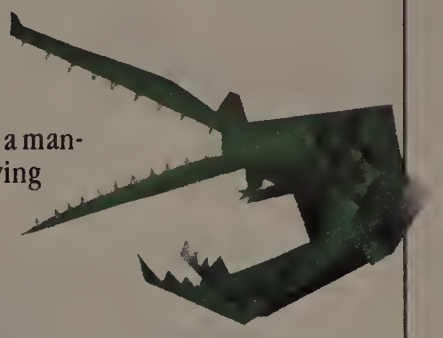
Then came the storm. The SBA, with a lot of help from Mr. Sycophant, decided he didn't like Mr. Smooth anymore. He also decided that the best person to manage the large project was his friend, Mr. Sycophant. So Mr. Smooth's department was dismantled, Mr. Smooth was assigned to the Never-Never Land project, and Mr. Naive ended up working for Mr. Sycophant.

Mr. Sycophant, inexperienced in large projects and management in general, started avoiding decisions. He evaded goal setting and, in general, made life on the project impossible, acting far worse than Mr. Smooth ever had. Mr. Naive assumed it was his duty, as a friend and a more seasoned employee, to help.

Mr. Sycophant was in the classic position of a techie-turned-manager. Many have identified it and talked about it: "Techies don't automatically make good managers. They need training." So Mr. Naive started encouraging Mr. Sycophant to take management classes, hoping he would learn fast.

After four grueling months with no improvement in the situation, Mr. Naive decided he wanted out of the project and away from this poor manager. He asked for a transfer to one of the other teams in the department. Mr. Sycophant gave him a short speech, concluding that he would do all in his power to grant Mr. Naive his wish. Then he went straight to the SBA and told him everything Mr. Naive had said.

Now Mr. Naive has been demoted and is working for a manager who reports to Mr. Sycophant. He's currently trying to decide whether to watch Mr. Sycophant fail and hope that things will get better or to get out before anything worse happens.



The moral

What's the moral of this story? We all can fall victim to the Sycophants of the world. So next time somebody tries to tell you how great you are or how much they admire your talent and superior knowledge, take it with a grain of salt. Look around. If he or she tells that to a lot of people, check your back. You are being set up by Mr. Sycophant.

P.S. Next time anybody, especially a personnel manager, paints you a rosy picture of future job opportunities that sounds too good to be true, ask for it in writing. It can't hurt.

Wise is the pen name of a network manager at a Fortune 200 company.

IT'S HARD TO DRAIN THE SWAMP when those reptiles keep getting in the way. If you have a network "alligator story" to share with *Network World* readers, call Steve Moore, features editor, at (508) 820-2543, ext. 732, or fax your idea to (508) 879-3167.

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